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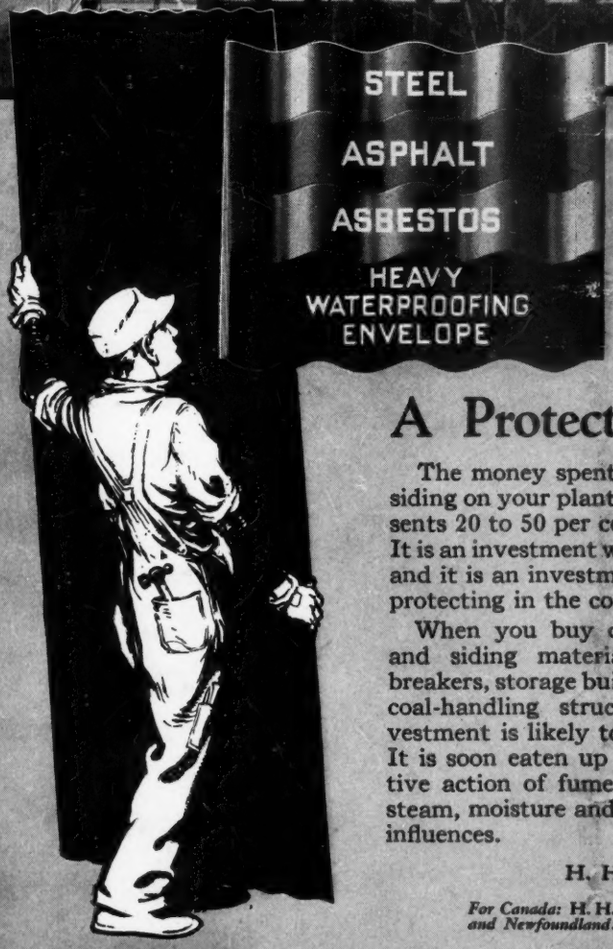

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COAL AGE

The Only National Paper Devoted to Coal Mining and Coal Marketing

C. E. LESHER, *Editor*

Volume 23 NEW YORK, JUNE 7, 1923 Number 23

The Purchasing Agent on Coal Contracts

FOUR resolutions concerning coal were adopted by the National Association of Purchasing Agents at their recent convention, each of which is designed to promote the relations between the buyer and seller and to tranquillize the coal market. One urges that consumers find the coal that best suits their needs and endeavor to purchase that same coal each year. In other words, establish the proper channels for trade and stay in those channels instead of shopping around for every purchase, playing one shipper against another in the search for minor price concessions. Turned around, the advice is good for the seller, and some coal operators have built a successful business around the policy of satisfying their customers so well that no energy is lost in continually seeking new ones.

Coupled with this is the advice to buy and store coal in the summer months against the winter's requirements, depending on annual contracts rather than spot purchases. Contracts always have been and always will be the backbone of business and were it not for recent experience in the coal trade this advice would seem superfluous. The violent fluctuations in the price of coal in some recent periods have induced a process of guessing the market from day to day rather than attempting a long look ahead. It were well indeed for the purchasing agents to lend a hand in restoring normal conditions.

With respect to the form of contract it was resolved that "The National Association of Purchasing Agents recommend to all mining and wholesale companies that each annual contract written show the percentage such contract bears to the expected output of the mine or mines producing the coal sold and that all contract customers be kept advised of the percentage of expected output contracted."

This proposal must be interpreted not as an endorsement of the form of contract that permits the operator or shipper to shave down deliveries on the basis of car supply but rather as a plea to the shipper to put all his cards on the table and afford the buyer an opportunity to check his performance. Buyers have by no means been altogether willing to accept the modern contract stipulation that when car supply falls off and spot prices mount, the shipper has the right to put a portion of his output on the open market and at the same time force the consumer to enter that same market for tonnage sufficient to make up what the shipper holds back. If, however, that is the contract right of the producer, then the purchasing agent is asking by this resolution the reasonable right of access to the records to check the performance of the seller.

The suggestion of the purchasing agents that after a flat price is named in a contract and provision made that "the average price charged for coal under the life of the contract shall not exceed the contract price" but that monthly variations in price shall be permitted is not particularly helpful, if indeed it has any point. A contract may name a flat price or it may simply represent an agreement as to tonnage with proper provision for setting the price currently. Both forms are in common use, but to attempt to join them can avail nothing, unless it be that the seller thereby calculates to have a top price set but no bottom. It will be noted that nothing is said about the average price not falling below the set amount.

Is Conciliation to Give Way to Direct Action?

FOR some twenty years it has been the agreed-upon procedure to settle disputes between the mine workers and management in the anthracite mines of Pennsylvania by arbitration and conciliation. Matters in controversy have followed up through mine committees to a board composed equally of operators and representatives of the miners. Disagreement there has put the question to an umpire whose decision has been recognized as final. Thus have the essentials of peace been preserved in what prior to 1902 had been a most turbulent industry.

There is soon to be an election in the anthracite region, in which the issue is the continuance of the existing order. Cappellini, long a disturbing factor, is running for the office of district president of the United Mine Workers against the organization candidate, Brennan. His program, his appeal, is the settlement of disputes and grievances by strike rather than the established machinery of arbitration and conciliation. An Italian, the unofficial but acknowledged leader of some 10,000 of his countrymen in the district about Pittston, Cappellini has an established record of successful outlaw strikes. He is admitted to have been behind the persistent outbreaks at the collieries of the Pennsylvania Coal Co. that characterized 1920 and 1921.

Despite the handicaps under which it has worked, the absolute adherance to customs and practices of a decade ago, the Conciliation Board, established by the Roosevelt commission, cannot be judged otherwise than as successful. That it represents a perfect arrangement neither side will contend, but it has functioned as a court of last resort and its decisions or those of its umpire have been quite generally respected. It seems to many that the time has come to extend its powers and functions to embrace matters of equity as well as interpretations of contract, but this would put too great a strain on its simple machinery. Better procedure would be to modify the terms of the contract, to negotiate and agree mutually on changes in working conditions and local wage rates.

An insurgent victory in Brennan's district can mean but one thing—that the already sadly ruffled feathers of the dove of peace will be further plucked. Trouble will perch on the banner of the United Mine Workers and strife and strike will further disrupt the production of anthracite. On June 26 the tri-district convention of the hard-coal miners' union meets to formulate

policy and demands on the operators for the contract that is to replace that expiring Aug. 31. If Cappellini sits with Golden and Kennedy it must be admitted that at best the prospects are for a considerable demand for anthracite substitutes in the East next winter.

There is as yet no reason to suppose that a peaceful settlement and new contract cannot be arrived at without an organized cessation of work; there is no occasion for predicting a strike on Sept. 1, but there is for fearing that trouble will attend the growing power of outright radicalism in the ranks of the hard-coal workers. It is small consolation to note that the Lewis policy of militancy is in a fair way to reap some that it has sown.

Desulphurizing Coke

IRON has an unfortunate way of taking up sulphur, and when it has acquired it the two are not easily separated. Bituminous matter always contains more or less sulphur. Unfortunately most of our American coals have more than we would desire in view of the fact that we have to use them for the manufacture of good commercial iron.

The coals that do not have an excess of sulphur rapidly are becoming exhausted, and we are beginning to realize that it is impossible to wash combined sulphur out of many coals because it has not segregated itself in sufficiently large masses and in some cases is not segregated at all, being part of the resins and humus of the coal.

As some coals that badly need desulphurizing cannot be deprived of their sulphur the question naturally has been raised, Cannot sulphur be taken from the coke? The coking process having modified the sulphur constituents under reducing conditions, air being absent perhaps coke by being heated in the presence of air may have some, at least, of the rest of the sulphur removed. Thus we would duplicate the reasoning of sewage purification, which utilizes the combined efforts of anaërobic and aërobic bacteria.

Unfortunately, as Arthur R. Powell shows in the article published in *Coal Age* last week, little hope exists that oxidation will make a sufficient change in the sulphur content to justify thus processing it. The sulphide of iron turns to iron and free sulphur, but that freedom is only relative. The sulphur is freed from the iron but held physically by the coke and consequently may recombine with the iron in the reducing zone near the mouth of the furnace to form iron sulphide.

In the iron-sponge zone the temperature once more liberates the sulphur, which is absorbed either by the iron or the lime of the charge. Whether iron sulphide or free sulphur enters the furnace makes no difference —the result is the same. The sulphates also are quite likely to be reduced, and hence sulphur, when it is in the form of a sulphate, may be regarded as almost as undesirable as when it appears as a sulphide.

The only form of sulphur that seems free of objection in the furnace is the sulphur in solid solution in the carbon. Even in this form its relative harmlessness does not appear proved. This sulphur in one of the cokes described by Mr. Powell runs 1.90 per cent, the other sulphur totaling only 1.30 per cent. As in three runs the aggregates of these other sulphurs were reduced to 0.87, 0.72 and 0.81, or from 33 to 45 per cent, it would still seem that an improvement worth while has been effected. With the other kind of coke the reduction in the sulphur, excluding solid-solution sulphur, was from 0.47 to 0.43, 0.36 and 0.31, the reduction varying from 10 to 35 per cent, which is a less significant quantity.

The Bureau of Mines is to be commended for its inquiries into the desulphurization of coke. They are being extended so as to embrace the effect of steam on that fuel product. It is to be hoped that in view of the importance of the subject, investigation will go on regardless of results, especially if they are no more discouraging than those in Mr. Powell's article.

"Fiddling While Rome Burns"

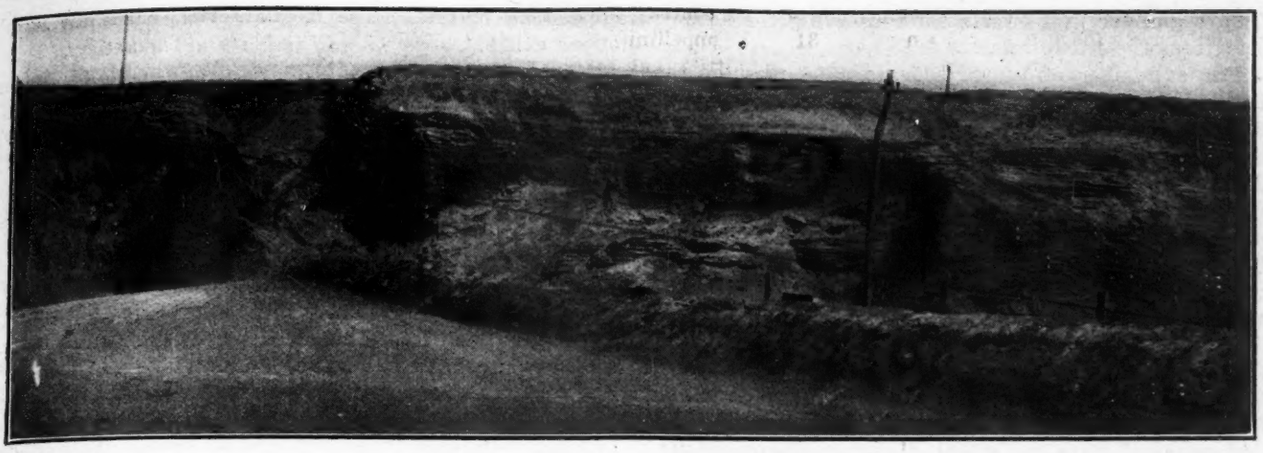
THIS time-worn phrase has lost none of its meaning with the passing of the centuries. It needs no amplification and no extended explanation.

It has been reported that the National Coal Association will have its annual convention this year at Atlantic City and that the usual two-day business session will be replaced with a four-day jamboree topped off with a boxing match.

It will hardly be seriously contended that the bituminous-coal operators of this country, who make up the constituency of this organization, are mentally incapable of taking part in a serious discussion of the problems that confront them, nor is there the slightest ground for assuming that the majority of these men are unappreciative of their present situation. True enough, for the moment there are no pressing problems of price, of labor, of distribution. Summer is here and the strain of a winter's coal troubles are past, but the strained relations between the public and the operators, the public and the miners and the operators and the miners have not been relieved. The country is impatiently waiting for the industry and the U. S. Coal Commission to tell it what can be done about high prices and periodic shortages.

This industry, which Lawrence Abbott recently said is the "worst hated" in the land, is on trial. The public's representatives are sitting in Washington seeking facts and hoping for interpretations of these facts that will lead to sane thinking about coal and constructive suggestions for the conduct of the industry. The men of the industry, above all others, are urged to come forward with help. Is a meeting of good fellows in the carnival spirit to be their best answer? Or is it that all that can be said has been told? Some forceful truths about the conduct of the United Mine Workers have been spread on the record but no scalps are yet hanging to the belt of the Special Committee of the Bituminous Coal Operators. It is time to beat the tomtoms and have a carnival when the victory is won. A council of war is more appropriate while the fight is on.

KANSAS, THE STATE OF CARRIE NATION, Sockless Jerry Simpson and the blue-sky law, will try anything at least once. It never hesitates officially to make an effort in any direction. But in the matter of opening its coal mines when there is none to buy the coal, in inducing railroads to reduce rates in summer to make coal more attractive financially, and in convincing consumers they should pile up storage heaps when they are afraid such heaps will burn spontaneously, the ambitious state unfortunately is finding out that some nuts are hard to crack. Thus far Kansas has not been able to do in a week what the rest of the nation has found impossible in a generation. But there is hope for the nation.



Steps in Recovery of Anthracite from Waste Piles

Early Mines Wasted All Coal Smaller Than Chestnut—First Waste-Pile Washers Produced Only Pea Size and Smaller—Crushers Now Break Up Larger Coal and Wash It—Coal Unspoiled by Time

By William Griffith
Consulting Engineer, Scranton, Pa.

THE use of anthracite for domestic purposes originated in the Wyoming coal fields in 1808, after the famous discovery by Judge Fell that with natural draft the coal would burn in a grate. For many years after that time, however, no method or process was known for consuming the fine coal which on a fuel bed filled the openings or draft spaces between the larger lumps and choked the fire, causing it to die out. Therefore in the early years of the anthracite trade only the "run-of-mine" coal larger than what we now call the chestnut size was sold or shipped.

The coal was blasted down in the mine and the sizes larger than chestnut were stripped from the fine coal with rakes and hauled out in mine cars. All the coal of finer size—chestnut and smaller—was left in the mine as waste. The marketable coal was then shipped, large and small lumps together, for a number of years, until the market demanded that the larger lumps be separated for engine and blast-furnace fuel and that the smaller ones be reserved for domestic purposes. Therefore screens were constructed at the mines to separate the run-of-mine coal into more acceptable sizes.

Almost 20 Per Cent of Coal Thrown Away

But the market soon demanded a larger proportion of domestic coal than the screening process produced; therefore about 1852 the Delaware, Lackawanna & Western R.R. Co. began breaking some of the larger coal and preparing it in sizes for domestic use. This company was followed by the Delaware & Hudson Co., and later by all the other operators.

This breaking down of the larger sizes produced a large percentage of small, unsalable coal at every mine (about 15 to 20 per cent) which had to be thrown out as waste at an expense of 5 to 15c. per ton. Thus began the old-time culm piles which though for years objects of great interest to those visiting the coal fields were a great nuisance and loss to the coal operators, who knew of no way to dispose of the good coal in them.

Thus originated also the higher prices asked in the market for domestic sizes of coal over the run-of-mine or smaller sizes, because the building of expensive breakers, filled with machinery, greatly increased the cost of the coal, the more careful preparation of the product involved much labor and the breaking of the coal into domestic sizes occasioned much loss. These additional costs were chargeable directly and entirely to the preparation of coal of domestic size. The waste piles consisted of about 80 to 90 per cent of pure coal of sizes too small to be utilized by any then known method and of from 10 to 20 per cent of slate and bone refuse picked out of the coal by boys as it passed through the breakers.

But as time passed progress was made in the art of burning fine anthracite. Methods and machinery were perfected for burning first the coarser, and later the smaller particles of culm, so that about 1867 we find pea-coal sizes returned separately for the first time in railroad toll reports. In 1887 buckwheat coal became useful.

About this time the accumulations in the culm piles attracted such public attention that the Legislature of Pennsylvania in 1889 passed "An Act to create a commission to investigate the waste of coal mining, with a view to the utilization of such waste, and making an appropriation for the expense thereof." This commission, appointed by Governor Pattison, rendered its report in 1893.*

The commission suggested purposes for which small anthracite was useful, methods of using it, etc., and one of the direct results of the commission's activities and its report was the immediate invention of several important devices for consuming fine anthracite. In 1895 rice coal was shipped for the first time, and in

Note—Headpiece shows a modern culm bank which has been deposited under water. This is clearly shown by the stratification of the material.

*The writer is the only surviving member of this commission.

1896 began the first efforts for conserving the smaller coal from the waste piles.

For a number of years prior to 1896 most of the coal breakers throughout the anthracite region had been equipped for preparing the smaller sizes and had been shipping increasing quantities as rapidly as the growing demand required. Therefore the waste of small sizes gradually ceased. They no longer went to the waste pile, but were burned at the mines or shipped from the breakers directly to market, the same as other sizes, and consequently the composition of the waste from breakers to culm piles gradually changed.

Instead of 80 to 90 per cent of the material consisting of small-sized pure coal, as formerly, the more modern waste piles contained only the coarser waste—slate and bone, lumps in part of slate and in part of coal—and a percentage of pure coal which passed to the waste pile on account of the imperfect cleaning processes in the breakers. The percentage of merchantable coal of domestic sizes which went to the waste pile varied with conditions and equipment.

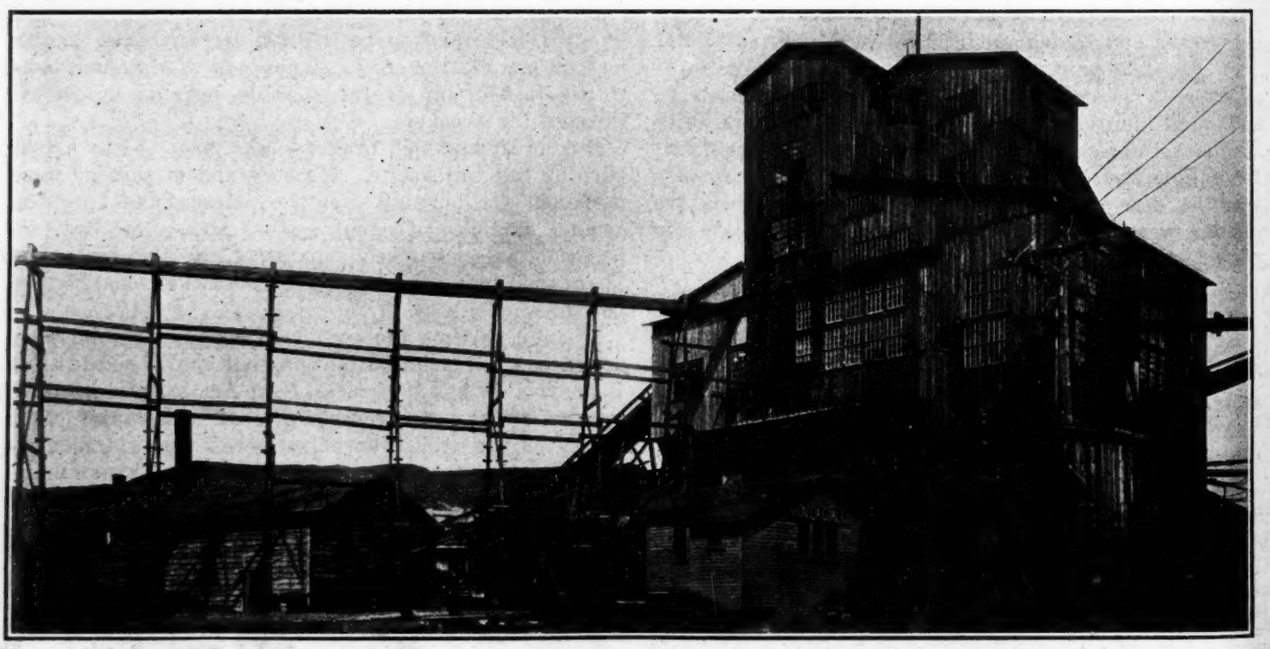
The low prices then universal tended to produce an indifference to waste and a reluctance to expend capital for the reconstruction of plants. For many years the standard method of cleaning domestic sizes was to have boys pick out the impurities as the coal passed them in chutes. The coal sometimes being wet, made it difficult to select the impurities that should be thrown out, and the results were correspondingly wasteful. Gradually machinery has replaced the breaker boy, and the proportion of good fuel sent to the waste dumps has decreased; but the accumulations of good coal of domestic sizes left in the waste dumps amounted to millions of tons.

From the foregoing we note therefore that anthracite waste thus far was of two quite different kinds: First, the old-time culm pile, composed of 80 to 90 per cent of small coal of pure, merchantable quality and 10 to 20 per cent of slate and impurities. At the present day most of the rich waste piles of the earlier days have been worked over and the coal largely conserved and shipped to market. The old-time rich culm pile no longer exists.

Second, the more recent waste pile, which can still be found throughout the region. It consists of the slate and bone, and of good coal some of which is inevitably wasted owing to the imperfection of our processes of separating impurities from the coal. Added to these also is the secondary waste from washing the old-time culm pile, consisting of all sizes above pea coal contained in the original pile, plus the fine dust or silt residue of the washing process.

Early Conservation—The first efforts to conserve commercial coal from the old-time piles began about 1896 and later, and were made by individuals in search of economical processes. These experiments at first were disappointing and costly, but gradually ripened into an economical standard process which was universally adopted. Small screening and washing plants were erected costing from $5,000 to $20,000 each, depending on the quantity of material and capacity of the plant. In these the contents of the pile were screened with the aid of water, no attempt being made to break down the larger lumps or to screen for coal of domestic size, all of which latter was thrown out as part of the secondary waste. Only the pea coal and the smaller steam sizes were saved.

As the old culm piles were gradually worked over and disappeared from the landscape, there still remained the refuse from the breakers and the secondary waste from the culm-pile washeries, many of which were known to be rich in domestic sizes of pure coal, and all of which, if it could be cleaned and separated from the slatey refuse, would provide much excellent and valuable fuel for both steam and domestic purposes, for be it known that anthracite coal in piles does not slake or deteriorate perceptibly with age, as do some grades of soft coal. In proof of and to emphasize the latter fact I give in Table I an analysis of a sample of pure coal which I recently took from an old waste pile deposited about 1855, and therefore exposed to weath-



WASHERY AT WINTON, PA., OWNED BY THE RHONDDA COAL CO., OF SCRANTON

This is a typical washery of the better class. It began operations in December, 1917, and has shipped 466,000 tons of coal to market to date. A culm bank is a pile of good coal, bone and rock. The coal is as good as when mined, but it cannot be separated without the necessary equipment. Yet some of the fly-by-night companies have delivered culm to market imperfectly cleaned and even entirely uncleaned. The size of this breaker will show why; they seek to enter the market without meeting the necessary expense of erecting and operating such a building, which with the machinery it contains is a costly investment.

ering for 65 or 70 years, and an analysis of a sample of a fresh-mined pure coal of the present day, both made by McCreath & Son, of Harrisburg, Pa.

TABLE I—ANALYSIS OF CLEAN WASTE-PILE COAL AND CLEAN FRESH-MINED COAL

	Coal Mined in 1855	Fresh-Mined Coal
Moisture	4.640	3.040
Volatile matter	8.677	6.360
Fixed carbon	81.820	84.066
Ash	4.863	6.534
	100.000	100.000
Sulphur	0.645	0.772
British thermal units, approximate	13,902	13,637

These analyses prove conclusively that at this particular point the old long-stored coal is still the better fuel.

In 1915 the increasing scarcity and advancing prices of anthracite, coupled with improved machinery and cleaning processes, stimulated experimental efforts to recover valuable coal from some of these slate and refuse piles, and, as in the case of the old-time culm pile, these later experiments, though costly, eventually resulted in the evolution of the modern washery plant for winning good, merchantable coal of both domestic and steam sizes from the modern slate piles and the secondary refuse.

The Modern Washery—The modern coal washery in order properly to prepare coal for domestic and steam purposes must be equipped to handle rapidly and dispose of daily large quantities of slate, rock coal, etc., separating from it the merchantable coal and shipping it prepared to conform with a standard at prices acceptable to its customers. This can be satisfactorily accomplished only through the use of much costly machinery, largely of recent invention, and of greater efficiency than the old-time screening and hand-picking methods.

Roughing plants at the pile separate the coarse refuse and immediately dispose of it, only the richer grade of material going to the washery building, which must be equipped with expensive machinery—rolls for breaking down the large lumps, and modern screens, jigs and other separating devices for the sizing and cleaning of coal for domestic purposes, and vibratory tables and other cleaning machinery for preparing the buckwheat and smaller steam sizes.

Consequently an efficient modern washery is a costly investment. I happen to know the cost of several such plants in the Wyoming-Lackawanna fields. Three of these washeries cost about $120,000 each, and one over $200,000. Elsewhere in the anthracite field there are efficient plants, some of which probably cost much more. All of them have been in operation for several years, producing large quantities of coal—from 300 to 1,000 tons each daily. These washeries are constructed and arranged for separating clean coal from the mass of refuse, and much care is taken to produce as clean a product from these waste piles as that obtained from fresh-mined coal. These first-class plants produce chestnut and pea for domestic use, cleaned to the standard which has been maintained and which consumers for many years have found acceptable.

In order to drive home these facts I give in Table II analyses by McCreath & Son of samples I took during May, 1923, one being a sample of washery pea coal from one of the first-class washeries in the Lackawanna valley and one, an average sample of pea coal prepared from coal just mined.

TABLE II—PEA COAL FROM A WASHERY AND ONE FRESH FROM THE MINES

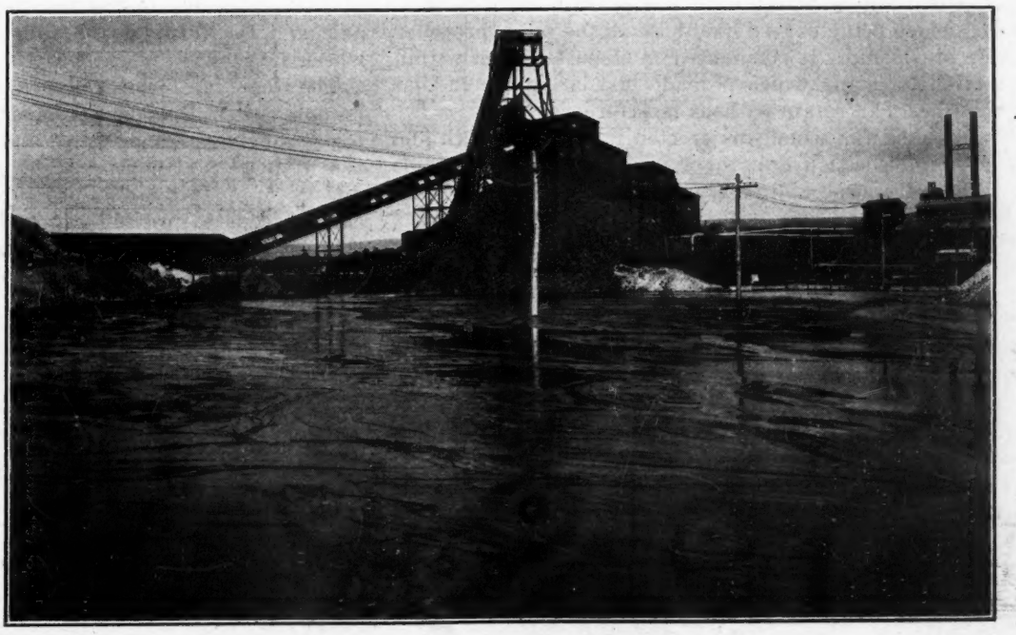
	Washery Pea Coal	Pea Coal Fresh from Mine
Moisture	3.660	2.930
Volatile matter	8.526	7.552
Fixed carbon	69.587	72.259
Ash	18.227	17.259
	100.000	100.000
Sulphur	0.681	0.641
British thermal units, approximate	12,116	12,251

Although this washery coal, as the analyses prove, is almost of equal quality with fresh-mined, it naturally does not command quite as high a market price, therefore this coal has been selling during the past winter at an average price 5 or more per cent less than the average published circular price for independent coal.

The conservation of coal from waste piles of anthracite has been for a long time and is now an important industry. Tables I and II show, what is well-known, that anthracite when stored does not deteriorate with age. The coal now taken from these slate piles, though it has lain exposed to the weather from 10 to 30 years, is as good a fuel as it ever was. In the words of another: "The story of the recovery of this coal is one of the most striking examples of the conservation of

Slate Bank and Slush Pond

This is at the Marvine colliery of the Hudson Coal Co. About 100,000 tons of refuse is removed in a single year's operation. The modern waste pile is lean indeed compared with the rich piles of earlier years, which contained coal thrown away to save the cleaning that the blow of a sledge or a pick would have effected, and coal rejected because smaller than chestnut and in some instances coal of chestnut size also.



natural resources and of the elimination of waste in the great industries that the history of our country records." If it were not for the lower-priced washery product of the past few years it is probable that the people would pay even higher prices for fresh-mined coal than have already obtained.

In conclusion, I wish to admit frankly that in the coal industry, as in all other industries of the country, there are unscrupulous persons. Some of the small, independent so-called washery operators have been shipping absolutely "rotten stuff" whenever the coal trade was in such straits that an inferior product could be sold. To prepare anthracite properly for the market is costly. When people without efficient and expensive equipment attempt to ship coal from waste piles they of necessity must ship dirty coal or refuse. It is recorded that Mr. Haldeman, investigator for the fuel distributors, found a number of shippers active in the production and sale of unburnable coal, among whom were "a former prize fighter, a former saloon keeper, an ex-convict, and others of questionable repute." In one instance it is reported that no attempt was made to separate coal and impurities. The "run-of-the-bank" was crushed and sized, run into bins, and then shipped to market. I cannot understand why legal action has not been taken ere this against individuals thus manifestly conducting a fraudulent business.

An attempt has been made recently through sensational and intentionally misleading propaganda to cast the onus for this illicit business upon the legitimate coal-washery operations. The reputable operator refuses to accept this undeserved odium. He is engaged in a legitimate business requiring a large investment of capital, is producing a uniformly good product of standard grade. This is sold by honest methods, at prices satisfactory to customers of long standing, who may with only casual inspection easily distinguish this standard coal from the meretricious trash already mentioned.

Big Losses in Improper Fan Operation*

By J. R. Robinson
Consulting Engineer, Pittsburgh, Pa.

MINE fans are of two types: the disk or screw-propeller type and the centrifugal. The disk fan is essentially a wheel with blades instead of spokes, each blade being curved like those on the screw propeller of a steamship. It is mounted on a shaft and set within a circular casing which is made just large enough that the wheel can rotate without interference.

The disk fan usually is erected in a drift mouth and in such a position that the axis of the wheel is in line with the airway. It is so bratticed about the casing that no air can pass without going through the wheel. Thus when the fan is set in motion the atmospheric pressure is on the outside of the brattice and the maximum mine pressure is on the inside.

The air is assumed to pass through the disk fan in a straight line parallel to the axis of rotation of the wheel, but in practice a large part of the air passing through the wheel is thrown outward at varying angles against the casing and against the sides, roof and floor of the mine. Where the pressure is high a large part of the air returns again and again through the wheel near its center.

Certain parts of this air travel in an elliptical curve and consequently do not enter the mine. Therefore they perform no useful work. Owing largely to this feature of the disk fan it does not economize the power it uses and therefore should not be employed where large quantities of air and high pressure are required.

This type of fan is used mostly for development work and in mines covering a restricted acreage which require only a small quantity of air at a low water gage. Sometimes it is used on larger mines where conditions permit it to be effective as a ventilator, but, though it may give good service, it is not economical in the use of power.

The Shoemaker Coal Co.'s mine at Lilly, Pa., is ventilated by an 8-ft. disk fan, chain-driven from a 60-hp. two-speed motor. At my visit to this mine last March the fan was passing 76,450 cu.ft. of air per minute at a 2.5-in. water gage. This is an unusual performance for a disk fan. The power in the air using the well-known formula was

$$\frac{76{,}450 \times 2.5 \times 2.5}{33{,}000} = 30.11 \text{ hp.}$$

The power passing through the motor as read by the wattmeter was 83.4 hp. The unit efficiency therefore would be

$$\frac{30.11}{83.4} = 36.1 \text{ per cent}$$

which is exceptional for a disk fan, considering that it is working against a 2.5-in. water gage.

In general the observations I have taken on disk fans have shown unit efficiencies of less than 20 per cent—in some cases as low as 5 per cent—so that the work of this disk fan is unusually good, but a good centrifugal fan made to suit the conditions of this mine would not use more than 45 hp., so that by using a disk fan much power is being wasted.

Centrifugal Fan for Volume and Pressure

The centrifugal fan has many shapes, varying from the old-fashioned paddle wheel of the Guibal fan to the most modern multivane wheel, but all of them work on the same principle—centrifugal action. In this type of fan the air is taken into the center of the wheel parallel to the axis of rotation and passes through a spiral curve leaving the wheel at the tips of the blades at a right angle to the axis of rotation. This action of the air is due to the rotation of the wheel on its axis and the form of the vanes or blades of the fan wheel.

The fans most generally in use are of this type, because when thus constructed they have a capacity for producing high pressure and are economical in the use of power. If properly designed to meet the conditions of quantity and pressure, the centrifugal fan can be made to provide any desired quantity of air at the pressure or water gage that the mine may require, and will do the work with a mechanical efficiency of upward of 70 per cent. That is, it will do so if the fan is designed to meet the known conditions of a given mine.

It does not follow that a fan made to suit certain known conditions, which meets these conditions successfully, and works with 70 per cent mechanical efficiency or over, will work with an equal efficiency when the conditions are changed.

As an illustration of this I will cite a mine that came under my observation recently. This mine was being ventilated by a multivane fan of a standard make. The maker guaranteed 75 per cent efficiency for the fan

*Address delivered before Coal Mining Institute of Fifteenth Bituminous District of Pennsylvania, May 19, at Barnesboro, Pa.

when working against conditions represented by 80,000 cu.ft. of air per minute at 2-in. water gage. The fan was belt-driven by a 50-hp. direct-current motor.

The fan was passing but a little more than half the quantity mentioned, and yet the motor was slightly overloaded. The officials of the coal company were displeased because they were unable to speed the fan any more with the present motor. Upon investigation I found that the fan was well constructed and well installed. I also found that the quantity of air passing through the mine was 46,000 cu.ft. per minute, that the water gage was only 1.4 in. with the fan at full speed and that the motor was carrying a load of 55 hp.

Now you will observe at a glance that both the quantity of air passing and the water gage were less than expected. You will also note that the mechanical efficiency of the unit was low.

The power in the air =

$$\frac{46{,}000 \times 1.4 \times 5.2}{33{,}000} = 10 \text{ hp.}$$

and the horsepower in the motor is 55. The mechanical efficiency therefore would be

$$\frac{10}{55} = 18 \text{ per cent}$$

This fan gave such poor results that the management expected that I would condemn it. Let us look into these observations and see where the trouble lies. If the fan had been speeded up until it passed 80,000 cu.ft. per minute through this mine the water gage would have risen to considerably more than 2 in., for it changes as the square of the quantity of air passing through the workings. We should therefore have the following equation:

$$80^2 : 46^2 :: x : 1.4, \text{ or } x = 4.23 \text{ in.}$$

You will observe that to pass the required quantity of air the water gage must be made twice that for which the fan was designed. When the fan was running at a speed to make the required water gage the mine was unable to take as much air as the fan was attempting to pass, so that the air was being taken into the wheel, and a large portion of the air was backing out of the inlets.

The motor was performing work on the air that was thrown back through the wheel, but no measurement of it could be taken, as only that portion of the air that passed through the mine could be measured as to quantity and pressure. Hence the unit was wasteful, but it was not the fault of the fan, for the maker of it had designed it for certain conditions, and when it was put to work the conditions against which it had to operate were not those for which it was designed; therefore economy could not be expected.

Surface Ducts Should Be Kept Tight

The leaks that so frequently occur between the fan and the point of measurement within the mine are often overlooked. This makes many fans appear to be wasteful of power when really they are efficient. It is of the utmost importance that the connection between the mine and the fan shall be practically free from leakage, for imperfections in sealing pass the air made by the fan from the duct or airshaft to the atmosphere in the case of a blowing fan, and in the reverse direction in the case of an exhaust fan. This occurs at the maximum speed at which the air travels, for the pressure at the leak always is more than the mine pressure. I will give you an illustration of this that recently came under my observation.

A modern multivane fan was installed at a mine to pass 110,000 cu.ft. of air per minute at a 2-in. water gage. It was speeded to run 240 r.p.m. and was belt-driven from a 50-hp. motor. It was a drift mine, and the fan was placed about 60 ft. from the first timbers in the coal. The duct connecting the fan with the mine was of wood. When the fan was running at full speed, only 81,000 cu.ft. of air per minute passed through the mine. The motor was carrying a load of 83 hp. The motor would heat if continually run with a load so much exceeding its rating, and it had to be stopped frequently to cool down.

The duct was then covered with concrete, and as a result measurements in the mine showed a current of 109,000 cu.ft. per minute at 2 in. water gage. The motor was using 46 hp. The power in the air =

$$\frac{109{,}000 \times 2 \times 5.2}{33{,}000} = 34.3 \text{ hp.}$$

and the horsepower in the motor is 46. The mechanical efficiency therefore is

$$\frac{34.3}{46} = 74.57 \text{ per cent,}$$

which is a good figure for a belted unit.

The power saved was the difference between 83 and 46, or 37 hp. This power at 1.5c. per horsepower-hour for a full year—the mine was running full time with its fan at full speed—would be

$$37 \times 0.015 \times 24 \times 365 = \$4{,}761.80$$

Nearly five thousand dollars a year was going to waste in leaks.

British Government Will Hold Contest of Mine Locomotive Manufacturers

ANNOUNCEMENT has been made by the Secretary for Mines of Great Britain that Charles Markham, colliery director, of Ringwood Hall, Chesterfield, has placed at his disposal a sum of £1,000 to be offered as a prize for the best type of electric storage-battery locomotive for use in deep and hot coal mines in place of "pit ponies." The condition to govern the competition are now being drawn up by a panel of judges representing the coal-mining industry, the Institution of Electrical and Mining Engineers and the Mines Department of Great Britain.

The competition will be open to manufacturers of any nationality, but the locomotives selected for trial will be tested in Great Britain. Several types of locomotives of this description are, of course, already being made in Great Britain, but it cannot be said that they are in extensive use in British mines. It would appear, says *The Engineer*, of London, England, to which we are indebted for this information, that the battery is the principal item requiring improvement.

The need for a suitable battery, it would seem, could be satisfactorily met by the manufacturers of storage batteries in America, but it is likely some redesign of American locomotives might be necessary to meet the needs of the lighter cars in use in Great Britain and the correspondingly lighter track. Until the formal announcement has been received, speculation is premature, but it is quite probable that a locomotive to meet English conditions should be designed along slightly different lines from one intended to satisfy the American market.

"Most wage earners," says Roger Babson, "spend all they get." It wouldn't be so bad if they earned all they get.—*American Lumberman.*

How Steam Production Costs Were Reduced in a Hand-Fired Return-Tubular Boiler Plant

Changes Made in Boilers Were Small and Inexpensive—Modifications of Firing Methods Require Slightly Less Work on Part of Firemen—Cost of Operation Greatly Reduced

BY A. R. MUMFORD
Assistant Fuel Engineer, U. S. Bureau of Mines

THAT greater economies and higher efficiencies are possible with a large number of boiler installations needs little argument. The methods for obtaining these results are varied, due to the many different factors involved. There are certain elements about every boiler plant and its operation, however, which when neglected or improperly directed or arranged have a marked affect upon the efficiency of the plant.

Investigation conducted on a hand-fired return-tubular boiler plant showed that before making some simple changes to the furnaces and method of control of the boilers the average cost of fuel to produce 1,000 lb. of steam was $0.5287, while after the changes had been made the cost was $0.3540, or a saving of more than 30 per cent.

The boiler upon which the investigation was made was a rather common type set up in quite the usual way; it was 18 ft. long, 56 in. in diameter, set 27 in. above the grates, 6 ft. deep and 5 ft. wide. The bridge wall rose to within 5 in. of the shell of the boiler. The space behind the bridge wall had been filled in so that the floor of this space was only 20 in. below the shell of the boiler. This form of setting is common and results in smoky and incomplete combustion when bituminous coal is used for fuel.

In the original installation the combustion space was small, and the gases were exposed to the cooling action of the boiler during all of their passage through the setting and, what is perhaps more important, were not subjected to any thorough mixing action. These conditions made it impossible to burn bituminous coal without producing more smoke than was permitted under the local regulations governing the emission of smoke. For this reason, pea-size anthracite was burned during the greater part of the day, and the plant was able to burn bituminous coal only at night, when the demand for steam was somewhat less than during the day and when the smoke could not be seen.

The presence of black smoke in the gases issuing from a stack indicates that the gaseous products formed during the combustion of the coal are not completely burned. In order to burn gases completely it is necessary to mix them with a certain proportion of air while they are so hot that the resulting mixture will be above its ignition temperature. There are limits to the amount of air that can be mixed with a certain amount of any combustible gas to form an inflammable mixture, and increasing or decreasing this amount of air above or below these limits renders the mixture non-inflammable, so that it may be impossible to ignite it. The rate of combustion of the inflammable mixture will vary with the proportions of gas and air, and it is desirable to mix the gases rapidly with air in such proportions that they may burn quickly in the furnace and combustion chamber. Thus the problem to be solved before the use of anthracite could be discontinued and bituminous coal used at all times without violating the regulations governing the emission of smoke, was to burn completely the gases formed during the combustion of bituminous coal before they left the setting.

The principal difficulties presented by the original setting were the small volume of the combustion chamber, which shortened the time allowed for the combustion of the gases, and the absence of any mixing device in the path of the gases which would have caused mixing of the combustible gases and air by changing the direction of flow of the gas stream and by changing its velocity at some point or points in its path. The first obstacle to overcome was the small volume allowed for the combustion of the gases. On account of mechanical difficulties involving excessive cost, it was not feasible to alter the relative position of the grates. The combustion chamber beyond the bridge wall, however, had been built up from a concrete floor with filling and a layer of loosely laid brick, and by removing this filling the distance of the floor from the shell of the boiler was increased from 20 to 30 in. This increase in combustion-chamber volume permitted the gases to move at a slower speed for a given rate of combustion and mixture with air, and therefore allowed them more time to burn completely.

OVERCOME SECOND OBSTACLE TO COMBUSTION

The second obstacle to complete combustion was the absence of any mixing device in the path of the gases. This was easily overcome by the installation of two semi-obstructing arches, one over the bridge wall and one in the combustion chamber. The vertical distance between the shell of the boiler and the top of the bridge wall was only 5 in. in the original installation, and this distance had to be increased to 10 in. before an arch could be placed over the bridge wall. This arch over the bridge wall closed off the former opening around the shell of the boiler and reduced the area available for gas passage from 5.6 sq.ft. to 1.7 sq.ft. The arch was extended for 3 ft. from the front edge of the bridge wall in the direction of gas flow, to provide hot firebrick surface for the ignition of any combustible gas-air mixture not previously ignited. The reduction in area caused a temporary increase in velocity, which resulted in a turbulent flow, so that mixing was greatly assisted. The increase in velocity and the mixing action were accomplished at the expense of the available draft, and this is the determining factor that governs the extent to which such obstructions may be employed.

Just beyond the bridge wall the area available for gas passage is 12 sq.ft., an increase of 10.3 sq.ft. over that available above the bridge wall. This increase in area considerably reduces the velocity of the mixture

of gases which have come through the restricted area and so gives them a longer time to burn. The deflection arch in the combustion chamber was of single-span construction, extending from the floor to the boiler, and leaving only a semicircular opening 4.15 sq.ft. in area next to the floor of the combustion chamber. This deflection arch caused the gas stream to turn toward the floor of the combustion chamber and further assisted in mixing by causing a second contraction, increase in velocity, and expansion of the gas stream. These changes in furnace arrangement in connection with the introduction of an improved method of firing permitted the substitution of bituminous coal for anthracite at a reduction of approximately $3 per ton in delivered price.

Observations made upon the furnaces and method of firing before changes were made showed that the operation of the boilers was left entirely to the firemen as long as sufficient steam pressure was maintained. This method resulted in irregular firing and high fuel losses because the firemen added fuel or worked the fires only with a view to maintaining the steam pressure between 100 and 110 lb. The dampers on all the boilers usually were wide open and when the steam pressure showed any indication of too closely approaching the blow-off point the firemen reduced the rate of combustion by closing the ashpit doors, and if the steam pressure continued to rise the rate of combustion was further reduced by opening the fire doors.

Evils of Closing Ashpit Doors

Closing the ashpit doors to reduce the combustion rate is an old and generally recognized inefficient practice, and usually results in detrimental affects such as overheated grate bars, increased clinker formation and increased flue-gas losses. Opening the fire doors to reduce further the rate of combustion not only produces the same evils that result from the closing of the ashpit doors but in addition cools the boiler unequally and puts a local stress on the boiler which, especially with fire-tube boilers, increases the wear and repairs necessary on boiler and brick work.

The evils resulting from the closing of the ashpit doors are caused by the changes in the draft throughout the boiler. When the ashpit doors are open the draft available at the damper of each boiler is used to draw air into the ashpit and through the grates and fuel bed, thereby burning the coal; to move the products of combustion through the boilers and to draw air into the setting through any openings in the fire doors or cracks in the brickwork or boiler casing. This influx of air through cracks in the brick work or boiler casing is objectionable and should be prevented by keeping the brick work and casing airtight. When the ashpit doors are closed the amount of air entering under the grates is greatly decreased, thereby decreasing the rate of combustion and the quantity of the products of combustion flowing through the boiler. Closing the ashpit door also increases the draft throughout the setting and thereby increases the infiltration of cold air into the setting through cracks in the brick work or openings in the furnace doors, and thus cools the products of combustion and increases the flue-gas losses. When the amount of air pressing up through the grates and fuel bed is reduced, the grate bars and the ash resting on them become overheated by conduction of heat from the fuel bed. This overheating melts the ash, forming clinker, and causes the grate bars to burn.

In Fig. 1 the flue-gas losses and excess air are plotted against boiler rating for two methods of boiler control. The solid curves show the variation in gas losses and excess air when the boiler was controlled by the ashpit doors, and the dotted curves show the variation in gas loosses and excess air when the boiler was controlled by the damper. The difference in heat loss due to the presence of carbon monoxide in the flue gases, shown in the bottom set of curves, is not wholly due to the method of control of the boilers but to a combination of the method of control, the furnace modifications and the method of firing. The effect of the increased mixing action is perhaps most important in the reduction of this loss due to carbon monoxide. The trend of both curves is similar, but the solid curve is higher at all ratings and the loss increases far more rapidly as the rating increases under the original conditions than it does under the modified conditions.

The difference in heat loss due to the temperature and composition of the dry flue gases, shown in the middle section of the chart, is due almost entirely to the method of control of the boilers. The curves are similar in only one respect, and that is they tend to become parallel to the baseline as the rating increases. The solid curve, showing the dry-gas loss when the boiler was controlled by the ashpit doors, rises rapidly with a decrease in rating; whereas the dotted curve, showing the dry-gas loss when the boiler was controlled by the damper, is more nearly level and descends as the rating decreases. The probable reason for the separation of the curves at higher ratings is in the improvements made in the method of firing, which was more regular under the improved conditions and consequently reduced the fluctuations in the proportion of air to combustible gas.

The curves showing the variation in the per cent excess of air for the two methods of control are similar to the corresponding curves of dry-gas loss. The solid curve rises rapidly as the rating decreases, whereas the dotted curve descends as the rating decreases.

In general, with ashpit door control practically the same draft at the breeching is available at all rates of combustion, but that part of the available draft utilized for actual combustion decreases with the rate of working the boiler. The excess of draft over that utilized for combustion draws air into the furnace and setting above the grates, thus increasing the excess of air and dry-gas losses as shown. With damper control the available draft is reduced by shutting the damper so that the draft available to the boiler is enough for the desired rate of combustion only, and no excess exists to increase the stack losses.

The Fireman's Criterion of Practicability

Perhaps the best criterion that can be used to judge the practicability of a firing method, from the standpoint of the firemen, is the amount of work he must do to produce a given amount of steam. If a new method requires more actual work on the part of a fireman, it is quite likely that the method will be opposed, but if the fireman can be convinced that the new method requires no more work, and perhaps less work, it will be more readily acceptable.

In order to determine whether a fireman had to perform more actual work per 1,000 lb. of steam produced when he fired according to an improved method than when he fired without any attempt at regularity and without care, a record of the work done by the fireman on a test with anthracite under the original operating

conditions and with bituminous coal both under original operating conditions and improved operating conditions was made. The results showed that the average work in minutes required of a fireman per 1,000 lb. of steam produced with anthracite was 2.69 minutes; with bituminous coal 1.98 minutes under former plant operation, and with bituminous coal 1.94 minutes under the new firing method. To produce steam with anthracite requires more work on the part of the fireman than with bituminous coal, because the anthracite contains more ash and has a lower heating value per pound than bituminous coal. Consequently, the higher ash content of anthracite necessitates more frequent cleaning and, on account of the lower heating value, a larger quantity must be fired to produce 1,000 lb. of steam.

The new method of firing requires approximately the same actual work per 1,000 lb. of steam produced as did the former method with bituminous coal as a fuel. However, the new method also requires supervision until the firemen become accustomed to firing small amounts regularly and to keeping their fires in good condition at all times. This supervision is the price to be paid for more complete combustion without objectionable smoke, and is equivalent to a saving of $0.0685, or 16 per cent, in the cost of fuel per 1,000 lb. of steam.

Leveling of Fire Insures Even Combustion

The time spent on leveling the fires is at least as much as that spent on firing, because this work is essential to efficiency. It is the leveling of a fire which insures even combustion, for in this operation holes in the fire bed are covered and the coke bed is loosened so that combustion takes place more evenly. In one test the fires were barred only after cleaning, when the fuel bed consisted almost entirely of freshly fired green fuel. The observations of the smoke produced showed that barring a fire generally produced objectionable smoke, whereas leveling a fire from the top with a rake did not produce objectionable smoke. Even with a rake, however, smoke can be produced if the fireman is allowed to force the rake too deeply into the fuel bed. A safe method of operation as regards smoke abatement is to use the rake for breaking and leveling the top of the fire without disturbing that portion resting on the grates. The grates themselves should be kept free from ash obstruction by running a flat hook over them at intervals of four hours. This hooking of the fires does not disturb the fuel bed to any great extent but does keep the air passages in the grate bars open.

The improved firing method utilized the alternate system of firing. Thus only one-half of the grate surface is charged with green fuel at any one time and the remaining half is left covered with a bed of freely burning incandescent coke from the preceding firing. In this way the fluctuation in furnace temperature is reduced and a temperature high enough to ignite the mixture of combustible gases and air in the furnace is maintained. The procedure followed was to charge with fuel that portion of the fire reached through one of the firedoors and to break and level the other half as part of the same operation.

In order to determine the performance of the plant both before and after the modifications in the setting and control were introduced, a series of tests at different rates of evaporation per hour mere made. Six tests, three with anthracite and three with bituminous coal, were made under the original conditions. After the conditions had been modified three more tests were run with bituminous coal, to determine the actual improvement in efficiency.

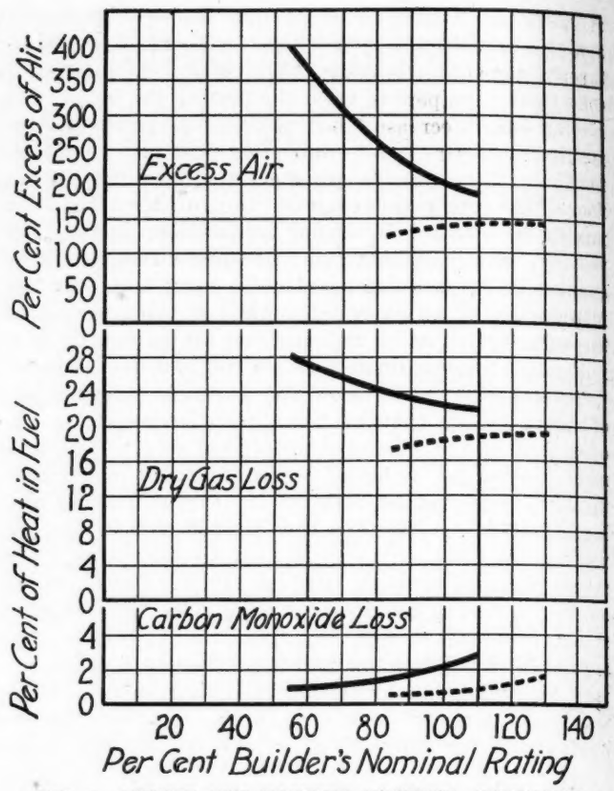


FIG. 1—ASHPIT AND DAMPER CONTROL COMPARED AT DIFFERENT RATINGS

It will be noticed that with the damper method of control the losses are less than with the ashpit method of control for all ratings. Such test curves give conclusive evidence in favor of the damper control.

The principal feature of the results obtained with anthracite are interesting. The efficiency and dry-gas losses decrease as the rating increases, while the loss in the ashpit refuse tends to increase with the rating. The large ashpit losses are due to the high ash content in the original coal which necessitated frequent cleaning of fires. It was found that steam could not be supplied in sufficient quantities if the fires were permitted to burn more than four hours without cleaning, so that the high ashpit loss was part of the cost chargeable to smoke abatement under the original operating conditions. The decrease in dry-gas losses with increase in rating further discredits control of boilers by ashpit doors instead of by dampers, for the decreasing loss indicates that the available draft was more completely utilized for combustion as the rate of burning coal increased.

Under the original operating conditions with bituminous coal the efficiency increased with the increase of rating. This increase in efficiency with increase in rating is accompanied by a reduction in dry-gas losses, and a reduction in the losses unaccounted for. The CO loss increases, as would be expected, as the rate of burning coal increases. The decrease in dry-gas loss with increase in rating is again due to the more efficient utilization of the available draft at higher ratings.

Under the modified operating conditions with bituminous coal the efficiency increases with a decrease in rating. The increase in efficiency is accompanied by a decrease in dry-gas losses and a decrease in loss due to carbon monoxide in the flue gases. The decrease in dry-gas losses with decrease in rating, just the reverse

of the trend of the dry-gas losses under the original conditions, is brought about by the decrease in pressure difference between the inside and the outside of the setting as the damper is closed. This decrease in pressure differences decreases the influx of cold air through leaks in the setting, and consequently results in less dilution and cooling of the products of combustion, and therefore less waste of heat.

The fact that the efficiency increases with a decrease in rating under the modified operating conditions is an especially desirable condition because of the low average rate of working the boilers in the plant under consideration. The average rate of working the boilers was estimated to be 75 per cent of builder's nominal rating. Thus the gain in efficiency due to modifying the conditions was 13.2 per cent over the original conditions with anthracite and approximately 9 per cent over the original conditions with bituminous coal. Thus from each 175 heat units in the anthracite, 100 heat units were given to the steam; and from each 176 heat units in the bituminous coal, 104 heat units were given to the steam before the modifications, and 123 heat units were given to the steam after the modifications.

The cost of coal per 1,000 lb. of steam under the original operating conditions at the average rate of boiler working was $0.7050 with anthracite and $0.4225 with bituminous coal. After modifying the conditions the cost of bituminous coal per 1,000 lb. of steam was $0.3540. These figures were obtained from the costs of coal obtained from the delivery records for the eleven month period from July 1, 1921, to June 1, 1922. During that period 2,653 gross tons of bituminous coal were delivered at a total cost of $19,535.16, or $7.36 per ton, and 1,957 gross tons of pea-size anthracite at a total cost of $20,121.31, or $10.28 per ton. These figures were used because present prices are not stabilized.

The total savings shown possible by the modifications introduced are approximately 900 tons of coal in an eleven-month period and approximately $12,500 in total fuel cost.

Discuss Engineer in Public Affairs

ENGINEERS are more and more coming to feel a greater sense of responsibility as citizens, said Gano Dunn, president of the J. G. White Engineering Corporation, at a meeting of the F.A.E.S. in New York on May 8.

"A discussion of 'The Engineer in Public Affairs,'" said Mr. Dunn, "necessarily turns our attention rather more toward the side of engineering that has received more attention in late years than ever before, the side of the engineer's generalship, the side of the engineer's organizing capacity, the side of the engineer's human contacts.

"There has never been a time when the demand for the education of engineers in the humanities as well as in the sciences and the technologies has been as great as it is today. There never has been a time when the demand for the education of engineers in English, in literature, in the fine arts, has been as great as it is today. The reason is an appreciation, not only on the part of engineers themselves but on the part of those with whom they work, that an engineer must be an all-around man before he can reach the heights of engineering.

"The groping and straining toward a larger part in national affairs that have been concomitant with the development of the national and other engineering societies in the last twenty years has been due to the feeling within engineers themselves that their places as citizens are more and more responsible as every day goes on.

"For my own part I think there has been a waning of opinion in engineering circles that has overemphasized the desirability, if not the appropriateness, of a certain extreme degree of participation of engineers in public affairs. On the other hand, the increasingly essential relation of engineering works and structures, engineering operations, engineering conceptions, and even engineering terms and habits in the daily life of the people of the United States, has been so marked that engineering of itself has been taking a greater and greater part in public affairs, and if the engineer cannot keep pace with his subject, then he certainly is unworthy of the name."

Admiral Robison told of the growing influence of the Navy as a moral factor in the progress of civilization. Engineering science in the Navy was making rapid progress, he said. Citing illustrations of increased efficiency, he continued: "Two years ago we spent considerably more than twice as much money in engineering as we have got today. We spent then about $3.75 per horsepower year for repairs and supplies and maintenance; this year we are spending $1.35 by the development of a method of self-maintenance in the fleet that has got the men on the job to do their own work. We have bought more material and put more material on the ships of the fighting fleet this year with $14,000,000 than we did two years ago with $31,000,000."

Admiral Robison said that the spirit of service is not peculiarly naval and that the engineers in the navy are but "representatives of the noblest profession in the world."

Utilities Consume 3,349,978 Tons of Coal In March; Power Production Declines

Electric public-utility plants consumed 3,349,978 net tons of coal during March, according to a report just issued by the U. S. Geological Survey. This compares with 3,249,927 tons consumed during February, according to corrected returns.

Fuel oil consumed by public-utility plants in March totaled 1,190,495 barrels, compared with 1,161,359 barrels in February.

The average daily production of electricity by public-utility power plants during March was 152,000,000 kw.-hr., or 1.6 per cent less than the average daily output in February. The revised figure for the daily output in February is 154,400,000 kw.-hr., which now stands as the record rate of daily production of electricity by public-utility power plants in the United States.

The slight decrease in rate of production of electricity in March probably was due to the usual seasonal decrease in demand for electricity. It is not expected, however, that the seasonal decrease this year will be at all marked. On account of the pronounced activity in practically all lines of industry at the present time with every indication that this activity will continue, it is believed that the present rate of demand for electricity will continue through the spring and summer and that there will be an increase in demand in the fall months as usual.

The average daily production of electricity for the first three months of 1923 and the proportion produced by water power were as follows: January, 153,300,000 kw.-hr., 34 per cent; February, 154,400,000 kw.-hr., 33.9 per cent; and March, 152,000,000 kw.-hr., 36 per cent.

Iron and Steel Electric Engineers Discuss Applications of Mine Hoists

FACTORS entering into the proper selection of mine hoists, covering a study of the various types of motors used, the method of control and the effects of these factors upon the hoisting cycle and the power bill were treated in a paper presented before the Association of Iron & Steel Electric Engineers at Pittsburgh, Pa., April 27, by F. W. Cramer and A. W. MacDonald, of the Cambria Steel Co., which owns and operates bituminous-coal mines in the Pittsburgh district.

The cost of the hoisting equipment bears heavily upon the selection of the hoist mechanism, gearing, type of motor and control, as these points all affect the first cost, maintenance and expenditure for power.

Complete electrification of a mine has many advantages which materially cut down the power cost of the main shaft hoist because the continuous load permits higher momentary hoist peaks without undue penalty. The main consideration in selecting hoist control from the standpoint of the power bill, however, is to have as low momentary peaks as possible.

The discussion in the paper dealt primarily on a comparison of the straight induction motor with magnetic contactor control, water-rheostat control, and the Ward-Leonard motor-generator system control.

Graphs and curves were used to illustrate the hoisting cycle of the induction motor with water-rheostat control and the hoisting cycle with the Ward-Leonard system. The curves showed how the momentary peaks were appreciably cut down by the latter system, the energy for the peaks being derived from the flywheel of the motor-generator set.

The cost of power, it was asserted, was low with the induction motor where the hoisting was irregular; but the power cost was relatively high for the Ward-Leonard system under these conditions, due to the considerable amount of energy taken up by the motor-generator set when the hoist was not operating. A continued regular operation of the hoist on the Ward-Leonard system greatly reduced the hoisting cost per ton.

Graham Bright, general engineer of the Westinghouse Electric & Manufacturing Co., gave an interesting discussion of the paper. He pointed out that considerable weight should be given to the consideration of the capacity of the power system when selecting the hoist control. Cost of power, when compared with old steam equipment hoists, is not of great importance because some electric hoists are operated at mines where there is required only 2 kw.-hr. per ton mined. Under favorable conditions the flywheel equipment may cut the demand to one-sixth of the value that would be required with the induction motor hoist.

L. C. Mosley, of the General Electric Co., formerly of the Hudson Coal Co., of Scranton, brought out in his discussion the importance of the drum shape upon the hoisting cycle.

The remainder of the meeting was then opened to discussion of the paper and general points of interest.

G. W. Quentin, Duquesne Light Co., spoke on the subject of continuity of service as rendered by the public utilities compared with power made by individual coal companies.

H. Goodwin, of the Sanderson & Porter Co., stated that custom power is most desirable for the coal operator. He also said he believed that in future there would be fewer installations of 25-cycle equipment.

E. J. Gealy, electrical engineer, with *Coal Age*, compared the electrical problems of the bituminous coal field and the anthracite field. He pointed out the advantages of complete electrification over piecemeal changing over to electricity. Continuous loads, he said, would improve the electrical operation by filling in the valleys of the demand.

Early Anthracite Operators Created a Market Only with Difficulty

IN THE early history of anthracite the coal operators' great desire was to push hard coal as an industrial fuel. Today the domestic market during most of the year will take all that is offered. The aggressive work, in promoting the sale of anthracite, of those pioneer days is reflected in some remarks by W. H. Williams, the present vice-president of the Delaware & Hudson Co. He says:

"In 1812 Colonel Shoemaker, of Pottsville, hauled nine wagonloads of anthracite to Philadelphia, and could sell only two, giving away the rest. He narrowly escaped arrest on the charge of attempting to sell for fuel something entirely worthless. The coal cost him as delivered about $28 per ton, but the enterprise was an important step in obtaining recognition of the fuel value of anthracite, principally because a wagonload was sold to White & Hazard, who operated a wire-works at the Falls of the Schuylkill. A whole night was consumed in efforts to make the coal burn and, in final despair, the workmen abandoned the endeavor but chanced to leave the door of the furnace shut. One workman forget his jacket and, returning to recover it, found an excellent fire and the furnace red hot.

"On May 20, 1829, the Board of Managers authorized the president of the D. & H. Co. to have cooking apparatus installed in its banking house,* in order to show that the company's coal could be burned therein. During the next year they investigated the Boston market; sent samples to Providence and even shipped several hogsheads containing anthracite to New Orleans. In 1831 it was arranged to furnish the Ulster Iron Co. with coal for experimentation in steam production and the steamboat 'Experiment' with enough for a trip to Newburgh and return. During the same year coal was supplied for the steamboat 'Victory' and for the use of the Walnut Street ferryboat, and employment was given to Nathan Smith 'to introduce the use of coal in manufactories and all establishments using steam engines,' and to R. Spencer 'for introducing the use of coal to blacksmiths, etc.'

"Efforts to extend the use by boats continued, and in 1836 anthracite was first used for a round trip to Albany. On June 23 of that year the 'Novelty,' with the the managers of the D. & H. Co. and distinguished guests, left her wharf at six in the morning and arrived at Albany twelve hours later, the first steamboat propelled by anthracite to achieve that voyage. In 1848 experiments were made in the use of anthracite for the manufacture of salt at Syracuse and Salina, and as a result of these experiments an expenditure of $10,000 to promote the adoption of this fuel was authorized."

* The D. & H. Co. in its early days was a mine operator, a canal owner and a banker.—EDITOR.

NOTICE HOW POLITE the coal man is getting.—*Wall Street Journal.*

NO REPARATIONS PLAN will work until the Hun does.—*Wall Street Journal.*

Problems When Selecting Type of Motor Drive for Large Mine Hoisting Plants

Limitations of Induction Motor—Maximum Momentary Peaks Seriously Affect Power Bill—Inertia of Driving Equipment and Hoist Drum Important Factors—Flywheel Motor Generator Set with Two Generators Provides Continuity of Operation

By Graham Bright
General Engineer,
Westinghouse Electric & Manufacturing Co., Pittsburgh, Pa.

During the past few years there has been a marked tendency to develop mines of very large output. At many of these mines it has been found desirable that the entire output be brought up one shaft. This immediately means high rope speeds or large hoisting loads; in some cases it is necessary to have both high rope speeds and large loads to obtain the desired output. In any event, these factors introduce many important problems, among them being the proper selection of the type of drive, exacting precautions to provide continuity of operation and low cost of upkeep.

Where rapid hoisting cycles are required the power necessary to overcome the inertia of the load and rotating parts represents a large part of the total power required. A steam engine is inherently fitted for this type of hoisting because the inertia of the engine parts is low and the engine can safely be used for retarding the hoist, leaving the brakes for emergency use only. In a large majority of cases, however, steam operation cannot, from a cost standpoint, successfully compete with electric operation. Where electric power is available new installations of steam hoists are becoming more rare each year.

Where power conditions are favorable, the loads small and the hoisting cycles are not too frequent the alternating-current wound-rotor induction motor with magnetic-contactor type of control will prove the most satisfactory.

In regard to the power system there are two factors that influence the selection of the proper type of hoist motor. The first is the capacity of the power system, including transmission lines. There are many central-station systems in this country that will not permit an induction-motor hoist of over 200 hp. to be connected to their lines. Only the larger systems can permit induction motors of over 500 hp. for hoist service to be used on their circuits. In many cases inadequate capacity of transmission lines prevents large induction motors being used for hoists—because of the poor regulation that would result.

A second condition is the form of contract under which power is purchased. Where momentary peaks are penalized it is necessary to make a careful analysis before determining the proper type of hoist motor to be used. This is best accomplished by determining the cost of power under different outputs, as the mine will operate at full capacity only a small percentage of the time. After the cost of power for different outputs has been determined a further analysis will show whether it will pay to install the more expensive direct-current hoisting system.

Where the power conditions are unfavorable it is necessary to go to the direct-current hoist motor using field control and in most cases a flywheel-motor generator set. There are cases, however, that bar the use of the induction motor even with favorable power conditions; these are cases where rapid cycles with high rope speeds are required or the extra safety and superiority of the control of the direct-current system is desired.

Where extremely fast cycles are required the inherent high inertia of the alternating-current motor produces abnormal peak loads and losses during acceleration, and in addition, the braking loads are too large to be absorbed by mechanical brakes. The direct-current motor of the same capacity has a lower inertia than the corresponding alternating-current motor; in extreme cases it is necessary to go to a direct-connected motor, thus resulting in much lower inertia than with the geared motor. The direct-connected alternating-current motor is out of the question in practically all cases because of the poor electrical performance of a slow-speed induction motor.

Fig. 1 illustrates a set of conditions which can be met best with the direct-current geared motor using a flywheel motor generator set. This hoist was originally equipped with a 350-hp. wound-rotor induction motor geared to the hoist drum through double reduction gears. This motor was used during the development

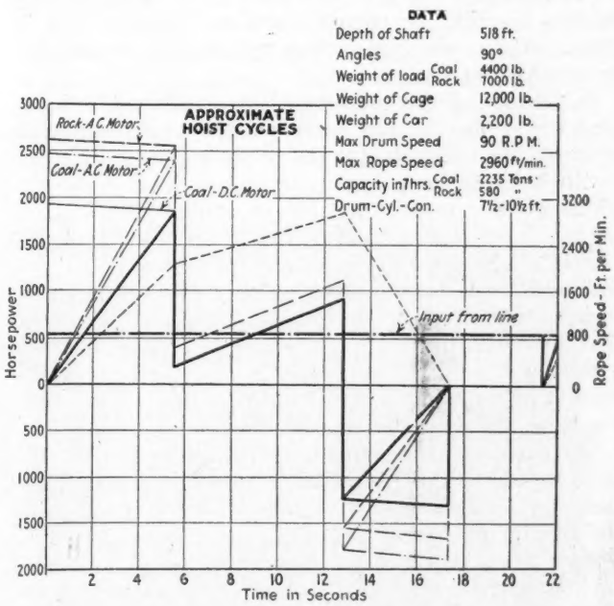


FIG. 1—COMPARISON OF A.-C. AND D.-C. MOTOR HOISTING CYCLES

These curves show the relative values of the peak loads which result when the alternating-current induction motor or the direct-current motor is used. The energy for the high points of the peaks is drawn from the flywheel when the direct-current motor is used on such a hoisting problem.

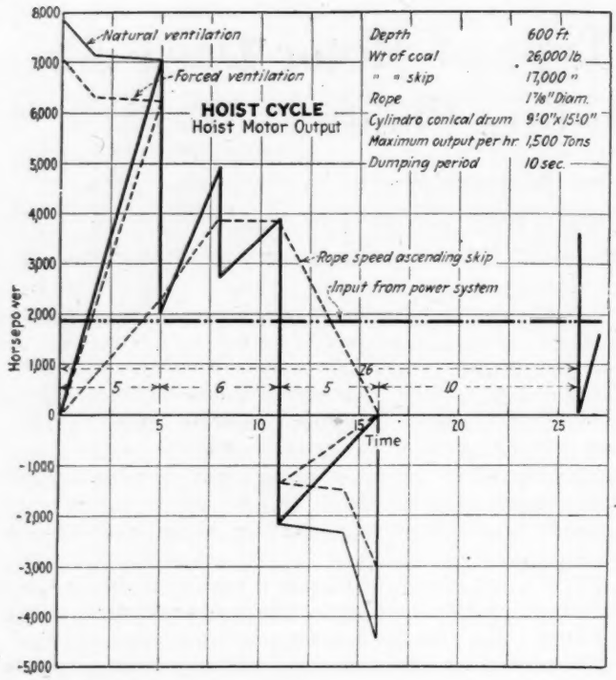


FIG. 2—HOISTING CYCLE WITH FORCED AND NATURAL VENTILATED MOTORS

The size of the motor may be greatly reduced when forced ventilation is used. This in turn reduces the peak loads of the hoisting cycle in that the inertia of the smaller motor is appreciably less.

stage and the momentary peak loads produced were between 400 and 500 kw. When it became time to replace the small motor with a larger motor to produce full capacity, as shown on the curve, it was found that there were two good reasons for substituting the direct-current system instead of continuing the alternating-current system. The curves show that with an alternating-current motor of approximately 1,500 hp. capacity the peak loads when handling coal would be about 2,500 hp. and a little higher when handling rock. During the braking period the power required will be over 1,500 hp., which is entirely too great to be absorbed by mechanical brakes.

In estimating the capacity of the hoist motor it was found that due to the extra capacity required while plugging the motor during the braking period the motor would have to have a capacity of at least 1,800 hp., which would overload the 1,500-hp. motor. Upon selecting a larger motor it was found that the increased inertia of the rotor of the larger motor would build up the peak load during acceleration and retardation to such an extent that the increased capacity was more than absorbed by the increased loads. This results in a pyramiding effect, which means that the alternating-current motor is not adapted to this type of cycle unless a special design is developed.

The capacity of the direct-current motor to meet this cycle was 1,350 hp. After this equipment was installed the mine was operated at about one-half capacity with the maximum momentary peak load from the power system of only 175 kw. This resulted in a marked saving in the power, due to the fact that momentary peak loads are penalized in the contract and the other load about the mine plant did not average over 200 kw.

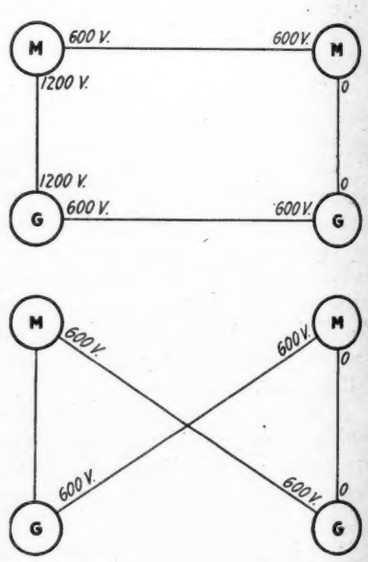
The above value of 175 kw. seems low when compared to the capacity of the hoist motor, but this brings out the advantages of the flywheel motor generator set. The flywheel supplied most of the energy for the half-capacity hoisting cycle in this case. It is important to bear in mind that sufficient time must be allowed between hoists to permit the flywheel to be brought back to speed, where the maximum input from the line is to be held as low as possible.

Where a large output is required from a shaft mine it usually is impracticable and undesirable from an engineering point of view to attempt to obtain the output by hoisting a single car at a time. To overcome this difficulty a number of mines have installed skips ranging in capacity from 6 to 20 tons. Under this system the coal is dumped into skip pockets at the foot of the shaft and the rope speed of the hoist system may be greatly reduced and larger quantities of coal brought up at each trip.

Fig. 2 illustrates a rather exceptional condition but shows the trend of high-speed and high-capacity hoisting in some of the coal fields where conditions for such capacity are favorable. This cycle requires direct-connected motors using a flywheel motor generator set. For a large system of this type it will be found best to install two hoist motors, one at each end of the shaft. Where such large capacities are involved a forced ventilated motor will show a considerable advantage. The capacity of an electric motor depends upon its ability to get rid of the heat losses without attaining a temperature of over 40-deg. C. rise. The ventilation of the motor when it is running greatly assists in carrying away these heat losses.

When the motor is at rest it is capable of taking care of about one-half of the losses that would be the case when in operation at full speed. For this reason a hoist motor with fairly long rest periods will have to have considerable more capacity with natural ventilation than would be the case with forced ventilation. This is illustrated in the curve shown on Fig. 2, where the total capacity required with natural ventilated motors is 4,400 hp. and with forced ventilated motors 3,400 hp.

The forced ventilated motors can be built with a smaller diamater armature, resulting in less weight and lower inertia, as shown by the power curves during acceleration and retardation. The heavy lines in the figures show the actual power delivered by the motor, while the light lines show the apparent power or torque. The high peaks at the beginning and end of the retarding period are due to the fact that the upper skip has partly overturned and a certain percentage of the weight is taken off the cable. These peaks, however, are torque only and do not represent real power. They have a



FIGS. 3 AND 4—CONNECTIONS WHEN TWO HOIST MOTORS AND TWO GENERATORS ARE USED

The connections of Fig. 3 add the two generator voltages, requiring heavier insulation and increasing the danger. In Fig. 4 the connection is such that the voltages are not additive, thus reducing the liability to breakdown or other dangers.

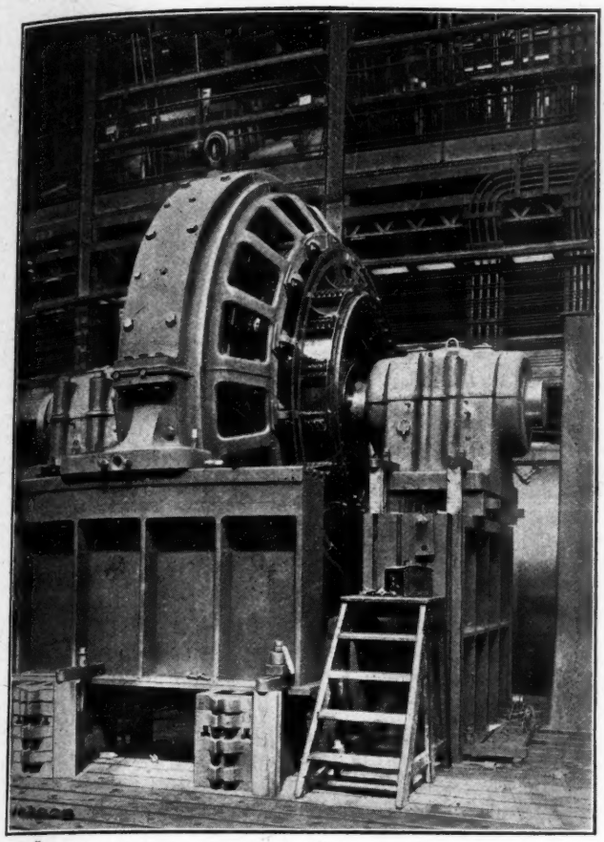


FIG. 5—TYPICAL D.-C. HOIST MOTOR

There is a tendency to think that all large motors are without question operated on alternating current, but when it comes to exceptionally large hoisting problems the direct-current motor again comes into its own.

considerable influence, however, in the heating of the hoist motors and generators, since it requires heavy currents to produce these torques.

It will be noted that the maximum variation in load is approximately from 7,000 hp. at the end of the accelerating period to —2,000 hp. at the beginning of the retarding period; the total variation is 9,000 hp. at the hoist, while the variation in power from the system will not be greater than 5 per cent on either side of the average input of 1,850 hp. The input to the alternating-current motor is kept constant by means of a liquid slip regulator.

The amount of power required during the braking period could not be taken care of satisfactorily by mechanical brakes. This braking is produced by the generators acting as motors and returning this power to the flywheel helping to bring it back to normal speed.

The equipment for such a hoist could be built with one large hoist motor and a motor-generator set consisting of an induction-motor flywheel and one generator. There would be considerable advantage, however, in using two hoist motors, one at each end of the drum shaft, and two generators on the flywheel set. The two hoist motors would have less inertia than a single-hoist motor and would have the advantage that in case of trouble one of the hoist motors could be disconnected and the other used with a reduced capacity of hoisting.

With a single generator on the motor-generator set the speed would have to be restricted to about 350 r.p.m., which would mean a large and expensive generator and induction motor. The flywheel also would have to be much heavier than with a higher speed set. By selecting two generators a much higher speed set can be used, which means a considerable saving in the cost of the generators. Incidentally, the induction motor and the flywheel will weigh considerably less, due to the fact that it can be operated at a much higher peripheral speed. In case of trouble with one of the generators it can be disconnected and the other generator used with a reduced hoisting capacity. The over-all efficiencies of flywheel sets run from 50 to 60 per cent.

For most fast hoist cycles the cylindro-conical drum is used. In general a drum of this type is so designed that the loaded rope travels on the small cylindrical portion of the drum during acceleration while the empty rope travels on the large cylindrical diameter. At the end of the accelerating period the loaded rope starts to climb the conical portion of the drum. This part of the drum generally is made as steep as possible so that the rope reaches the larger diameter in three or four turns. By this means as much as possible of the travel takes place on the large diameter of the drum.

The best size and shape of the drum depends on a great many conditions, one of the most important of which is the inertia of the drum parts. A comparison of the various sizes and shapes of drums will be of little value unless accurate information is available regarding the inertia values.

One of the most important parts of a flywheel hoist equipment is the control. The magnetic type has proved much superior to the hand-operated drum type especially in regard to automatic acceleration, retardation and the application of safety devices. Automatic acceleration and retardation can be obtained in a manner much more satisfactory than any mechanical scheme that restricts the movement of the control lever during acceleration and forces the control lever to the "off" position during retardation.

The scheme of using two motors and two generators with a flywheel motor-generator set system has not been applied in this country to hoisting equipment, though it has had considerable application for reversing rolling-mill equipments. In order to divide the load equally it has been found best to connect the armatures of all machines in series. The ordinary scheme for doing this is illustrated in Fig. 3, which shows the two generators connected in series and the two motors connected in series. This, however, produces a total voltage of 1,200 when 600-volt generators are in use.

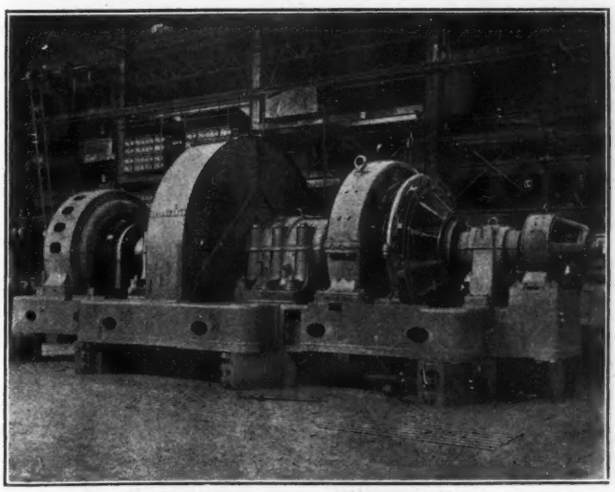


FIG. 6—FLYWHEEL MOTOR-GENERATOR SET

This motor-generator set feeds the direct-current motor in Fig. 5, which is used on heavy shaft duty at Butte, Mont.

Where large machines are involved best engineering practice shows that 600 volts is the most economical for a single generator. With the generators in series, however, it is necessary to insulate the machines for 1,200 volts and there is added a considerable danger to the operators due to such high voltage on commutator types of machines. A much better arrangement of circuits is shown in Fig. 4, where the motors and generators are alternated. This keeps the maximum voltage down to 600 and permits the use of standard and well-tried equipment. The advantage of the arrangement shown in Fig. 4 is so great over that as shown in Fig. 3 that it is doubtful if the safety committee at any mine would permit the installation of the equipment wired up as shown in Fig. 3.

Most of the large electric hoists in this country have been installed in metal mines but it is probable that in the near future the capacity of the equipment of coal-mine hoists will not only approach but probably will exceed the largest capacity installed in the metal mines. Fig. 5 illustrates a 2,000-hp. 72-r.p.m. 600-volt direct-current hoist motor which was installed at the North Butte Mining Co., at Butte, Mont., in 1915. It would require two such motors to meet the cycle illustrated in Fig. 3. Fig. 6 illustrates the flywheel-motor generator set which supplies power for the hoist motor illustrated in Fig. 5. The capacity of the generator is 1,500 kw. and the capacity of the alternating-current induction motor is 1,400 hp. The flywheel weighs 100,000 lb.

Fig. 7 illustrates a liquid slip regulator which keeps the power input to the induction motor at a constant value; this regulator is entirely automatic.

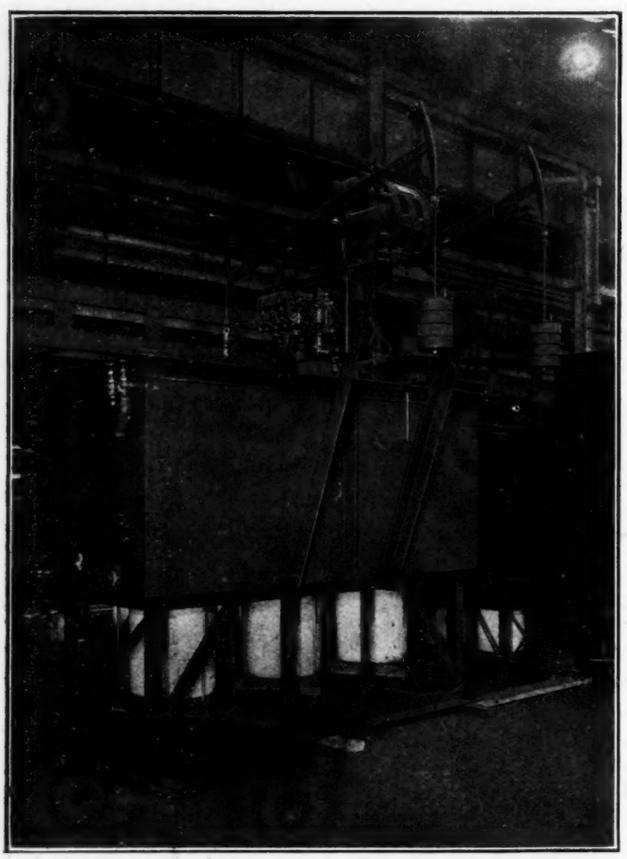


FIG. 7—LIQUID SLIP REGULATOR
The function of the regulator is to automatically control the input to the motor of the motor-generator set. Its operation maintains a constant input from the power system.

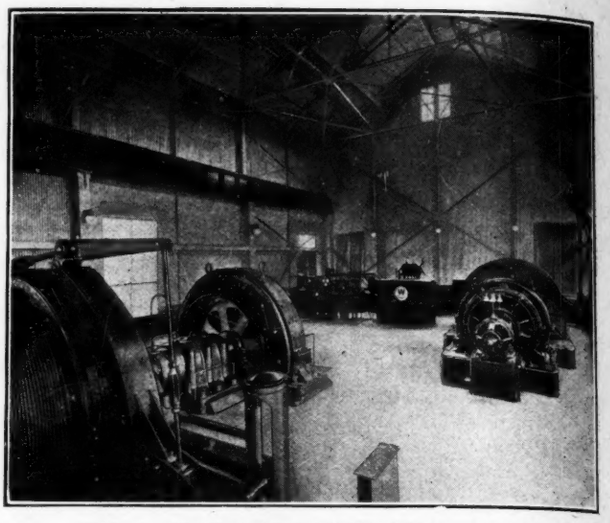


FIG. 8—COMPLETE HOISTING EQUIPMENT
All the parts of a large hoist installation are shown here. Problems of the coal field are daily being solved by installations of flywheel hoisting equipment.

The hoist room of the North Butte Mining Co. is depicted in Fig. 8, which shows the hoist motor, flywheel, motor-generator set, slip regulator and control.

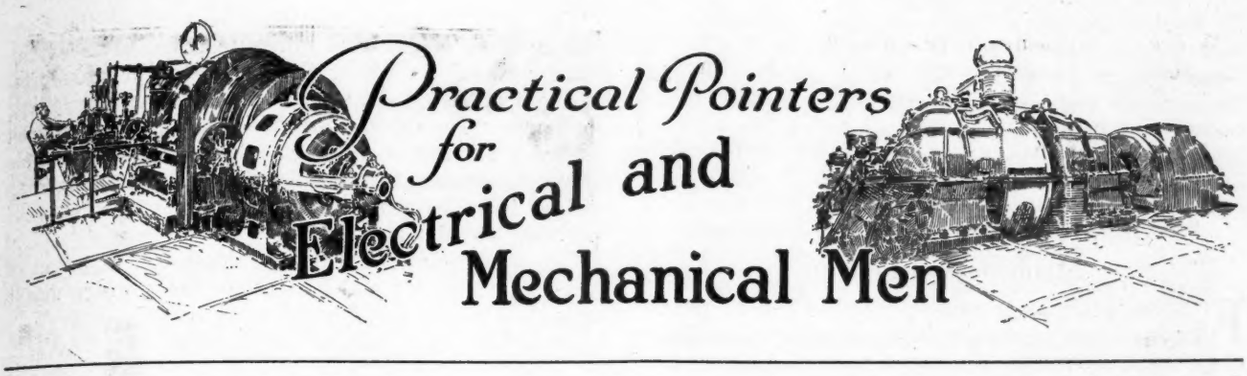
I have had the pleasure of directing the application of the above installation at the North Butte Mining Co. as well as two other installations of the same capacity, one at the Butte & Superior Mining Co. at Butte, Mont., and the other at the International Nickel Co.'s mines at Copper Cliff, Ont. The equipment at the Butte & Superior company's plant was originally laid out to add a second hoist motor and a second generator and flywheel to the motor-generator set at some later time.

For such large and important installations as that required in the cycle shown in Fig. 2 it will be readily seen that the application and construction of such equipment should be undertaken only by those who have not only a thorough understanding of such problems but who have actually installed equipment of somewhat similar size and capacity.

Mining the Parent of Almost All Other Branches of Engineering

SPEAKING in Scranton, Pa., at the one hundredth anniversary of the founding of the Delaware & Hudson Co., April 24, W. H. Williams, vice-president of that organization, remarked as follows: "Coal was to the Delaware and Hudson Co. and its railway as cause to effect. It was that, also, to that earliest locomotive of which we boast and to the steam engine, in which every locomotive had its genesis. The first uses of the inventions of Newcomen and Watt were in pumping English coal mines. And railed roads were known to the mining practice of Newcastle-on-Tyne for two hundred years before the first common-carrier railroad came into being with the opening of the Stockton and Darlington on Sept. 27, 1825.

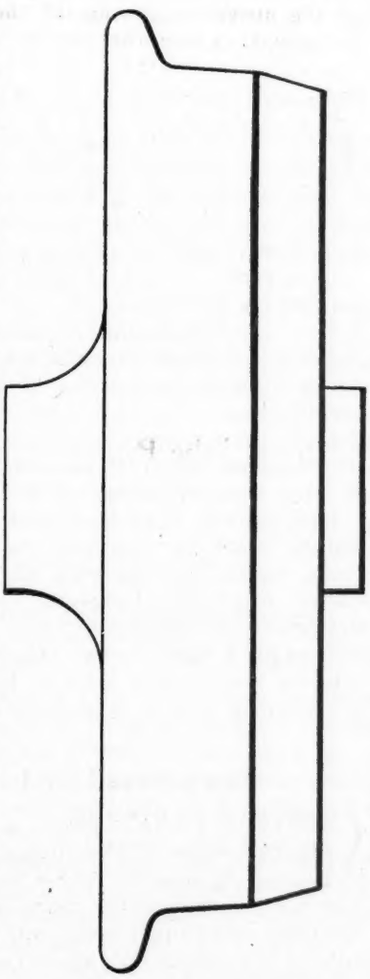
"Regular use of locomotives in English colliery practice antedated the Rainhill competition by not less than seventeen years. Precisely as the railway, the steam engine and the locomotive were developed as incidents of English colliery practice, just so the Delaware & Hudson's railway system was evolved to make possible the mining and marketing of the 'black stones,' 'stone coal' or 'anthracite' of the northern anthracite region."



Prevention of False Flange on Locomotive Wheels

VARIOUS methods for preventing the formation of false flanges on electric mine locomotives have been suggested and used with some success. The method most generally resorted to is the use of a shoe with abrasive material inserts. Frequently this insert material does not seem to be properly placed or the brake shoe gets out of alignment and therefore does not cut where the false flange has a tendency to form.

Some locomotives continually work on certain curves year in and year out and the false flange invariably forms on one side of the locomotive and not on the other. Under these conditions a little study of the characteristic formation of the false flange will be found most interesting and probably will suggest possible remedies. In one such place a study was made at one of our collieries and when the wheels and axles were sent to the repair shop to have the false flange turned off, we suggested to the shop superintendent that the tire be turned down as shown in the illustration. The sketch shows how the tire was reduced in diameter where the false flange had a tendency to form. The result obtained was most satisfactory. As usual the tire wore close to the flange and eventually the tread became straight and the false flange did not form before the life of the tire was ended when the reduction in tire thickness reached the limit of safety.



WHEEL WITH TAPERED TREAD

False flanges are the cause of many derailments and high cost of track maintenance. The above shaped wheel prevented the formation of false flanges on the locomotive equipped with these wheels.

Recommended Rail Weights for Haulage Systems at Coal Mines

A POINT frequently discussed by some of the mining men of our company is on the subject of the standardization of track gages and proper size rails for different locomotives. It seems to me a very regrettable fact that track gages have not been standardized. With our company the track gages run from 24 in. to 48 in. including seven different gages, and a great amount of hardship and difficulty frequently results due to the almost utter impossibility of transferring equipment in the event of breakdowns. Then again, the differences in weights of rails is just as great and for the most part the rails are too light for the locomotives used.

Suggestions for standardization in these two lines, I believe, would result in much benefit to the mining companies. Perhaps a great deal of progress cannot be made on present installations, but for the benefit of new companies and mines which will be opened in the future I believe a presentation of the subject in your columns would be most interesting. ELECTRICAL OPERATOR.

In conformity with the most recent recommendations of the American Mining Congress, all coal-mining operators are urged to install in all new work a track gage of 42 in. and curves having a minimum radius of 28 ft. Recognition of the wisdom of these recommendations will, for obvious reasons, react to the mutual benefit of both purchaser and manufacturer of equipment. If for any reason deviations from the standard is absolutely necessary, such deviations should be made in 6-in. steps over or under the standard of 42 in., but where possible the standard gage should be most rigidly adhered to.

Recommendations for rail installations for various sizes of locomotives may easily be derived from a rule to allow 200 lb. on a driving wheel for each pound weight of rail per yard. For example, a four-wheeled locomotive weighing 30,000 lb. should therefore run on a 40-lb. rail. For a six-wheel locomotive of the same weight, a 25-lb. rail would be used. From the rule the following table may be constructed and should be interpreted as the absolute minimum size rail which should be used for four-wheel locomotives:

Weight of Locomotive in Tons	Weight of Rails in Pounds per Yard	Weight of Locomotive in Tons	Weight of Rai in Pounds per Yard
4 to 6	16	13 to 15	40
6 to 8	20	15 to 20	50
8 to 10	25	20 to 25	60
10 to 13	30		

When practicable, however, it is desirable to use rails of a heavier weight than in the above table, to avoid possible deflection of the rails over loose ties and earth, which would increase the resistance and thereby reduce

the hauling capacity of the locomotive. Another advantage for the heavier rail is the increased contact the wheel has on the wider rail, which greatly increases the adhesion and materially cuts down slippage, formation of false flanges and promotes better maintenance of locomotive and track.

Six Requirements of a Well-Designed Machine Foundation

FOR foundations for modern rotative and reciprocating machines it usually develops that a foundation of sufficient horizontal plane area to encompass the base and anchor bolts of the machine and of sufficient depth to reach good bottom or to go below the frost line will automatically have ample weight, proper proportions and sufficient base area to satisfy all the necessary requirements for a good foundation.

Unfortunately, this is not always true, and for this reason it is necessary to check the foundation to see if it meets the several requirements of what constitutes a satisfactory foundation.

These requirements may be briefly grouped into six rules, as follows: (1) The foundation must have sufficient properly disposed base area so that the pressure imposed by it on the supporting soil will not at any point exceed the safe foundation soil pressure for that kind of soil.

(2) The foundation should have sufficient base area and should be so disposed that there is not too great a difference between the loads imposed by the foundation on different equal areas of the supporting soil.

(3) The foundation must have sufficient weight and be of such proportions that the line of action of the resultant of the total vertical load with any non-vertical force which may be occasioned by the operation of the machine will always fall within the base area of the foundation.

(4) The foundation must have sufficient weight to prevent its sliding horizontally on the supporting soil.

(5) The foundation must have sufficient weight to prevent the supported machine from being lifted upward.

(6) The foundation must have sufficient properly disposed weight to prevent its being rotated horizontally around a vertical axis.

Renewal Costs High When Incandescent Lamps Are Not of Proper Voltage

I UNDERSTAND that the life of incandescent lamps decreases when the lamps are used on a circuit of higher voltage than their normal rating. As to just how serious a matter this may be I am not exactly clear.

I would be pleased if you would give me some information on this subject in your columns, because there is considerable argument among our men on this question, and no doubt it is a problem in the minds of many mine foremen who are trying to hold their maintenance costs as low as possible. MINE FOREMAN.

Various pieces of electrical equipment are made with a generous overload capacity. Most every motor manufacturer has designed his motors for half-hour and two-hour overload ratings. Then, again, most electrical equipment will operate satisfactorily on overvoltage or undervoltage of 10 per cent.

The wide voltage fluctuations on some of the more remote lines in the coal mines and also some of the heavily loaded lines near the generating or transforming equipment present a real question of proper voltage for lamps. The desire to standardize and keep in stock as few a number of different voltage lamps as possible is very necessary owing to the liability of the wrong voltage lamp being used when there is a large stock of variously rated lamps.

The table below very clearly shows the variation of amperes, volts, life and lumens for the average mazda lamp:

Per Cent Amp.	Per Cent Volts	Per Cent Life	Per Cent Lumens
100	100	100	100
101	101.5	82.75	105
102	103.5	64	113
103	105	53.40	119
104	107	42.75	126
105	109	33	135

Note that as low an overvoltage as 5 per cent increases the current 3 per cent and decreases the life to 53.4 per cent and increases the lumens only 19 per cent.

This means that the renewal cost for lamps will be doubled, especially when consideration is given to the cost of labor in renewing the lamp and handling the extra orders.

In the selection of a lamp consideration should be given to the above facts and a choice should be made of a lamp commercially popular so as to be able to get quick deliveries and advantage of a lower unit production cost.

Rebabbitting Bearings for Mine Equipment

THE old babbitt should first be melted out and a suitable mandrel prepared. Split bearings should be babbitted one-half at a time, and the mandrel should consist of a half-cylinder with shoulders running along its length, on which the sides of the bearings may rest so as to form a close fit when the bearing housing is in position for babbitting.

Pieces of felt should be placed between the ends to prevent the babbitt from running into the oil well in the spaces back of the bearing shell. Use only the best babbitt metal. The melted babbitt should be poured in the gate until it begins to overflow and a few moments should elapse before it is removed from the mandrel, in order that the bearing may become quite hard.

The bearing housing should then be placed in a suitable chuck or dog and the inside turned to the proper bore. The holes for inspecting the working of the oil rings should then be drilled and the oil ring slots melted to the proper depth. The finishing can be done with a file. If the mandrel is a smooth half-cylinder the oil grooves may be shaped out, but the grooves may be cast by properly designing the mandrel.

Town Saved by Little Pump

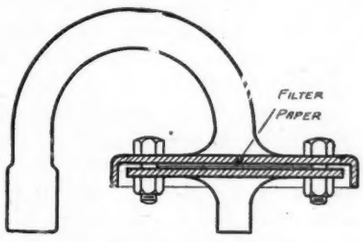
CENTRAL LAKES, Minn., a village of 150 inhabitants, located in the timber country, recently was threatened by a large forest fire. Just when the fire was moving toward the main section of the town an Evinrude centrifugal pump was brought to the assistance of the bucket brigade. The pump had been hurriedly brought by two National Guardsmen a distance of three miles through a flaming roadway. The pump was installed in a cistern under the parlor floor of one of the Central Lakes homes and proved itself a little giant in the work of halting the progress of the flames.

New Equipment

Transformer Breather Maintains High Dielectric Strength of Oil

MORE attention is being given of late to the necessity of maintaining the high dielectric strength of transformer oil. It has long been asserted by many electrical workmen and engineers that many fires and breakdowns classed as having resulted from "unknown causes" were the result of a gradual depreciation of the insulating oil, caused either by dirt or moisture.

In the operation of transformers the oil contracts or expands, due to variations in temperature as a result of varying loads, which causes the taking in or expelling of air, commonly called "breathing." This breathing process carries air into the transformer, and moisture in the air is deposited in the transformer oil, reducing its insulating value. To prevent moisture entering the transformer due to breathing, and lowering the dielectric strength of the oil, devices called "breathers" have been used.



ASSEMBLED BREATHER READY FOR MOUNTING

This cross-section shows the "Pittsburgh Breather" with filter paper between two steel flanges. The opening is enlarged for the passage of air and the filter paper is reinforced on the outside by copper screening.

The principle of the "Pittsburgh Breather," manufactured by the Pittsburgh Transformer Co., for taking moisture out of the air before entering the transformer is the same as the well-known filter press principle for taking moisture out of oil.

On air entering the transformer, moisture is deposited on the outside surface of the breather, where it is dried off. The drying process is still further accelerated by the warm air being expelled from the transformer.

Detachable Bits for Drilling Augers Eliminate Blacksmithing Edges

TO THE coal miner a drill is the most important article in his equipment. The importance of a good drill with a suitable cutting edge is evidenced by the fact that all miners carefully guard a new drill and are frequently noticed carrying a drill home at the end of the day.

The shape and sharpness of the cutting edges of a drill are a very direct indication of the value of a drill to the miner. A poor cutting edge on an otherwise good drill makes the drill of little value.

Several schemes have been employed to improve the utility of the miners' drill, one of the latest developments along these lines being the "Diamond" detachable bit patented and manufactured by the Jos. McGlaughlin Co., Joliet, Ill. This eliminates the old method of blacksmithing the cutting edges on a drill and then laboriously filing them into shape. Instead there is supplied a detachable bit made of chrome nickel steel.

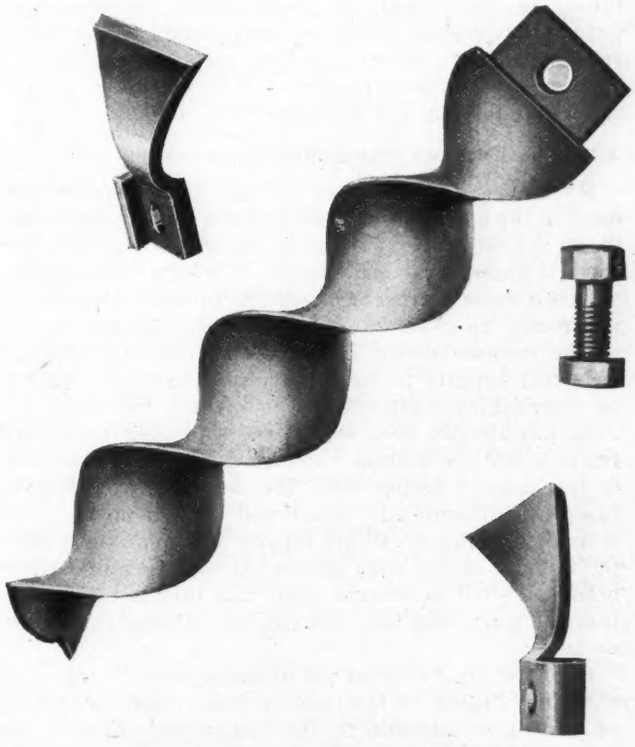
The advantages claimed for a detachable bit of this nature are that the design is mechanically correct, the bit is made of special material best suited for cutting, it will cut a straight, even hole under any condition without undue strain or binding, it can be readily transported with the miners' tools without the danger attending the carrying of long drills near electric conductors in the mines, it readily provides an extra set of cutters and affords ease of replacement.

The bits are made up of two interchangeable parts, both fishtail and diamond point type, readily applied to almost any type and make of coal or breast drill—either old or new, thus making readily available an unlimited supply of bits for a few drills. The bits are made in all the common sizes used in mining work and are said to be durable, simple, convenient and economical.

BIT OF MANY CUTTERS

Cutters are small and easily attached to drill. New cutting edges can be kept on hand thus eliminating the necessity of transporting long drills.

The illustrations show the diamond-shaped cutters, which are the most popular type. The inclination and angles of its cutting edges have been determined and recommended as most practical by mining men. These points are of primary importance for fast cutting augers and easy running drilling machines. Several patents already have been granted and applications are pending in foreign countries.



DRILL CONSISTS OF FEW SMALL PARTS

The two cutting edges and one bolt constitute all the detachable parts. Two new cutting edges make a new drill.

Problems of Operating Men

Edited by James T. Beard

Point of Ignition Disputed in the Wakesiah Explosion

No Evidence to Support Conclusion That Ignition Took Place Near Pumpman—Mine Regulation Act Revised—Blowing Out Gas Forbidden

I HAVE read with interest the letter of "Mining Engineer," *Coal Age*, March 22, p. 493, in which he argues that the ignition of the gas, in the Wakesiah explosion of Nov. 24, 1922, must have taken place at some point near the pumpman, or outby from the point assumed in the report of that explosion, given by W. H. Moore.

Kindly permit me to correct that impression, which is based on a seeming lack of an intimate knowledge of the condition of affairs, as found after the explosion. Besides reading the account of the disaster given by Manager Moore, which appeared in an earlier issue of *Coal Age* (Jan. 25, p. 184) I have been afforded the opportunity of making a close study of the situation in that mine.

After carefully considering all the facts in the case, I have been unable to find any evidence in support of the conclusion of "Mining Engineer." Obviously, had this explosion originated outby from the point mentioned in the report, as that writer contends, the unfortunate fireboss would not have sought to escape by running in that direction. The facts show that the fireboss had run a distance of 84 ft. down the return airway, before he fell overcome with the gas.

Fireboss' Cap Burned to a Cinder

My observation convinces me that this disaster was more in the nature of an inflammation than an explosion in its initial stage. Then, as the flame traveled the entry it gained heat and energy. I believe mention has not been made of the fact that the fireboss' cap, which was picked up close to his lamp, 21 ft. from the nozzle of the compressed-air hose, was burned to a cinder. This fact appears to me to have an important bearing on determining what actually took place.

As has already been stated, the shotfiring cable was found where the fireboss had placed it on the floor close to the valve, together with the detonators or electric fuses, which were still intact and showed no signs of scorching or flame. In his report, Mr. Moore says that the interior of the lamp gauzes showed signs of having been subjected to intense heat; but this is not to say that the gauze had been red hot, as "Mining Engineer" assumes.

Owing to the fact that the firedamp mixture was considerably diluted, by the blast of compressed air thrown against it in addition to the ventilating current, the situation appears to me that when the lamp, in its overheated condition, was exposed to this high velocity, its flame passed through the gauze and ignited the gas outside, with the result that the fireboss' cap was burned while he, perhaps, made an ineffectual effort to smother his lamp.

In concluding his letter, "Mining Engineer" suggests that, "a safety lamp is safer when the wick flame is at its full height, provided it does not smoke." To my mind, this is a pernicious doctrine, since the principle of a safety lamp depends on the cooling effect of the gauze. Certainly, the lamp gauze would be hotter when the flame was at its full height and its cooling effect would then be proportionately lessened.

When a lamp with its flame burning at full height is exposed to an atmosphere containing a small percentage of gas the height of the flame is considerably lengthened; and it is possible that this fireboss was not aware of the danger until too late and his lamp had filled with flame. My belief is that it is safer to carry a smaller flame, which will give out less heat and provide a wider margin of safety.

Mines Regulation Act Amended

It is worthy of mention that this disaster has drawn the attention of the Mines Department of British Columbia to the danger of the practice of blowing out the gas with compressed air. As a result, the Coal Mines Regulation Act has since been amended, forbidding that practice. Without doubt, the lesson to be learned is that relating to human fallibility and the need of absolute caution and care in the use of flame safety lamps. No amount of knowledge can safeguard us if that knowledge is not applied.

In closing, let me say that the human factor is always present. We are prone to omit to take the precautions that our better judgment should tell us are needed to insure safety. Why does not the present inventive age produce a universal means of detecting gas that will eliminate the present hazard? The fact that we are still using the modified devices of 100 years ago for this purpose would seem to reflect on the ingenuity of the mining world.

J. Hynd.

Nanaimo, B. C.

ANOTHER LETTER

More information needed—Position of pumpman and motor driving pump should be stated.

IN THE discussion of the probable cause of the Wakesiah explosion, it is quite noticeable that no one, not even the report first given by the manager, has stated the exact position of the pumpman when found, following the explosion. All that has been said is that he was working on the return airway, at a point about 250 ft. distant from the fireboss where it was assumed the explosion started.

It would be interesting as well as important to know the position of the motor driving the pump. It has

been stated that the pumpman was working with an electric lamp. That being the case, he had no means of knowing the highly explosive condition of the air current bearing down upon him, the ignition of which a few moments later killed him.

In my opinion, it is a waste of time to discuss the possibilities of the failure of the safety lamp carried by the fireboss. It is not probable that he exposed his lamp to any such pressure as 90 lb. per sq.in., which was said to be the pressure in the compressed-air line. This pressure, of course, would be quickly reduced when the air left the nozzle of the pipe.

That the Lamp Failed Is Improbable

The failure of this double-gauze bonneted lamp of approved pattern is quite unlikely in the hands of a competent fireboss. As has been proved by many experimenters, a safety lamp if tilted from a vertical position becomes dangerous, because the circulation does not then pass up the chimney and out through the top, but escapes through the gauze just above the glass.

In that position of the lamp, it is possible for an explosive mixture to form and almost fill the lamp, before reaching and being ignited at the wick. In this respect I consider the old Stephenson ("Geodie") lamp was dangerous. In that lamp, the air holes below the flame were too small to admit the air required for the combustion and air entered the lamp above the glass even when the lamp was in a vertical position.

Mining Engineer, No. 2.

———, Alberta, Canada.

Reconstruction in Coal Mining

Aftermath of the war—Conditions much changed in the mining of coal—To get efficiency in production the real problem.

SPEAKING of efficiency in the management of mines, many suggestions have been made as to how this is to be obtained in the present state of affairs. It will be generally agreed that we have not, as yet, recovered from the effects of the war. At that time, it was necessary to try any expedient that would count and the slogan was, "Anything to win the war."

Now, conditions are changed and mine officials are beginning to look about them to ascertain what is needful to improve the situation, which has come as a result of the trying ordeal through which this and other countries have passed during the last few years. In my opinion, most mining men are in a dilemma as to where and how to begin to secure efficiency in the operation of their mines.

Inefficiency Resulting from the War

It cannot be denied that the war situation has created a vast army of raw recruits in the mining of coal. This is true, not only in respect to the class of miners now employed in many of our mines; but there have been opened and many attempts made to operate new mines, most of which must prove, sooner or later, financial failures. Even in the older mines, conditions are such, today, that the problem of producing clean merchantable coal is no joke.

Careful study of the situation should cause many investors in mining property to make a searching inquiry into the manner in which their capital is being employed, not to say squandered; and to ascertain what means and methods of reconstruction are under way that will insure increased efficiency in the various operations and management of the mines in which their capital is invested.

Competition is the life of trade, it is true; but that does not warrant the throwing away of thousands of dollars of invested capital where the prospective returns do not warrant the outlay. In making this statement, it is not my wish to offend any of our able mine managers. It is my desire, only, to put the case as one should view it from an economic as well as a practical standpoint and without prejudice.

Foresight and Thrift Now Needed

There are instances where the mine management have not displayed the foresight they should. It reminds me of the mother of a large family, who, in attempting to supply the needs of John, Sarah and a dozen others, found, too late, that the loaf would not go round. Sending to the store failed to get more, as the supply was exhausted, and some of the children had to go without.

Let us remember that war conditions are now obsolete and we must display foresight and thrift in the management of our mines, in our efforts to make the payroll bear a margin of profit and that one and all may be satisfied. To accomplish this in the various departments of the larger coal companies will require careful inspection and a systematic weeding out of what is not required. In other words, the slogan in mining today should be "reconstruction." System is needed in every branch of the work, which must be co-ordinated. At the same time, each department must stand on its own footing. In other words, as the old saying puts it, "Every tub must stand on its own bottom," here as elsewhere.

Gans, Pa. R. W. Lightburn.

Gobbing Slate in Room-and-Pillar System

Two systems of working, advancing and retreating—Rooms widened and gobbed according to two rules, affording protection for track.

BEING familiar with the methods in common use in the mining of coal is Kentucky, I take the liberty of offering a few additional comments and suggestion in reply to the inquiry of A. L. Trimble, Big Shoal, Ky., which appeared in *Coal Age*, Apr. 12, p. 608, asking for the best method of gobbing the slate taken down in rooms driven to right and left of a pair of entries.

Two systems of working are commonly employed, the advancing and retreating methods, depending largely on the character of the roof, floor and coal of the seam. In the advancing method, the rooms are turned and driven to the limit as the entries are advanced. In the retreating method, no rooms are turned till the entries have reached the boundary or limit, and room turning starts at that point and proceeds outby.

In the advancing system, the pillars may be drawn back as quickly as each room reaches the limit; or the robbing of pillars may be delayed until all the rooms in a section are furnished. In the retreating system, however, the robbing follows closely the extraction in the rooms.

Now, with this explanation, all that remains to be said, in respect to the gobbing of slate in the rooms, is included in two rules, as follows:

1. If pillars are to be drawn as soon as rooms reach the limit, all rooms turned to the right must be widened and gobbed on the left; and all rooms turned to the

left must be widened and gobbed on the right. In each case pillarwork must then start in the second room.

2. If the work of drawing pillars is to be delayed and pillars are to be taken out on the retreating system, all rooms turned to the right (advancing) or to the left (retreating) must be widened and gobbed on the right; and, *vice versa*, rooms to the left (advancing) or to the right (retreating) must be widened and gobbed on the left. The work of drawing pillars must then start on the track of the next-to-the-last room inby.

By following these two rules, the track on which the coal is to be hauled out will always be protected from the falls in the waste left behind.

Pikeville, Ky. GEORGE EDWARDS.

Inquiries Of General Interest

Planning Working a Coal Property, Two Steeply Pitching Seams

Two Anthracite Seams, Pitching 45 Deg., Separated by 125 ft. of Sandstone—Physical Conditions Require Approach on Hanging-Wall Side

WE ARE trying to work out the best possible plan of opening and developing an anthracite property and would greatly appreciate seeing the proposition discussed by the many practical readers of *Coal Age*. With this idea in view I am taking the liberty of presenting for their consideration the condition and requirements as they exist:

There are two seams lying at angle of about 45 deg. and outcropping on the surface. The two seams are separated by 125 ft. of solid strata and both the hanging wall and the footwall in each seam are massive sandstone beds of about 20 ft. in thickness. The coal is 5 ft. thick in one seam and 6 ft. in the other.

To make clear the situation, let me state a few points as requirements and outline our general ideas in regard to the proposition. The physical conditions are such as to require approaching these seams from the hanging-wall side. Study of the situation in all its bearings has determined us to start by driving a 2,000-ft. crosscut tunnel to reach the coal on the side of the hanging wall. We contemplate the probable total extraction of one of the seams, before starting development in the other.

When the crosscut has reached the coal in the upper seam we plan to drive a level each way in that seam, extending it to the property lines on either side. From this level raises will be driven on the full pitch of the seam at distances of 400 ft. apart, and extended up the pitch to the outcrop on the surface, a distance that will approximate 2,000 ft. One advantage gained by this plan is that it affords means of ample natural ventilation.

Having finished these raises, we may then undertake to extract all the coal on some retreating plan that seems to be practicable, possibly a modified longwall applied to limited sections. Another method would be to crosscut each panel, between successive raises, at short intervals adapted to driving chutes and working out each section, in turn, starting from the top and proceeding downward, drawing back the pillars as the chutes are finished.

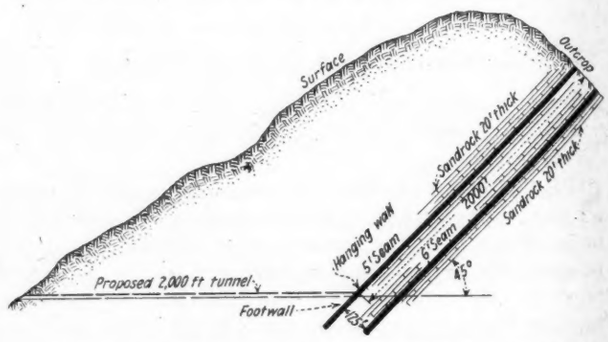
Our first thought, in reference to the longwall plan, was to employ retarding conveyors for lowering the coal to the gangway level. In the chute method, there should be no difficulty experienced in keeping the coal moving on this inclination, especially with the use of sheet iron on the floor of each chute. Someone has suggested the use of endless traveling cables, in each raise, the portion of the cable moving downward along the floor, as a means of keeping the coal moving. While it is claimed that the operation of the cables would require little power, the plan does not appeal to me as practicable.

We hope this outline will draw forth a good discussion and result in many valuable suggestions coming from the experiences of others working under similar conditions. L. L. TRAVIS.

Ophir, Utah.

Had this correspondent favored us with a sketch or profile it would have assisted in making clearer the exact situation. It would also be both interesting and helpful to know what are the "physical conditions" that make it necessary to approach these seams from the side of the hanging wall. We will assume that they relate solely to the location of shipping facilities and surface plant and in no way affect the mining of the coal.

Since these two seams are said to outcrop and have an inclination of about 45 deg., the fact that they



ASSUMED PROFILE SHOWING PROBABLE SITUATION

must be approached from the hanging-wall side would suggest a situation somewhat similar to that we have outlined in the accompanying figure, showing the proposed 2,000-ft. tunnel driven on the side of the hanging wall, and the two seams 125 ft. apart and inclined at an angle of 45 deg.

The plan of driving a gangway level, right and left in the seam where it is intersected by the cross-tunnel and extending these levels to the property lines on either side cannot be improved. Also, the laying out of the seam above the gangway in panels, by driving rise headings on the full pitch of the seam is good. In the further development of the seam, the retreating longwall face with the employment of a face conveyor will probably give good results under this sandstone roof. There is no difficulty to be expected in the sliding of the coal on this steep pitch. The hardness of the anthracite will favor the use of retarding conveyors, requiring little or no power in their operation.

This is an excellent problem for discussion by practical mining men, who will be able to offer many valuable suggestions from their varied experiences and we hope for a good response to this appeal.

Examination Questions Answered

Examination for Mine Managers, Springfield, Ill., Mar. 19, 1923

(Selected Questions)

QUESTION—*Two drill holes one mile apart are put down to a coal seam; the depth of the first is 634 ft. and that of the second is 850 ft.; the surface at the former is 25 ft. above the latter. What is the inclination of the coal seam between the two points measured in inches per yard?*

ANSWER—The bottom of the second hole below that of the first is 25 + 850 — 634 = 241 ft. One mile is 5,280 ft. or 1,760 yd. The inclination of the seam, therefore, is (241 × 12) ÷ 1,760 = 1.643 in. per yd.

QUESTION—*What is the proportion of marsh gas and air in a firedamp mixture that will develop a maximum explosive mixture?*

ANSWER—The proportion of gas to air at the maximum explosive point of the mixture (methane and air) is 1:9.57, or approximately 1:9½.

QUESTION—*What are the limiting proportions that determine an explosive mixture of pure methane and gas?*

ANSWER—The limiting proportions forming an explosive mixture of these gases are, lower limit 1:13; upper limit 1:5. Actual explosion of the mixture, however, depends largely on the purity of the gas, the normal state of the air and the intensity of the flame causing ignition.

QUESTION—*How many cubic feet of marsh gas will be required to be generated in a mine per minute to render dangerous a current of 30,000 cu.ft. of air per minute?*

ANSWER—Much depends on the character of the coal in respect to its hardness and inflammability, also the condition of the mine with respect to dust. In an anthracite mine 3 per cent of gas would not be considered dangerous, while in a bituminous mine and a highly inflammable coal 1 per cent of gas in the current will often be dangerous. In this case, assuming the danger point is reached when the proportion of gas to air is 1:40 (2½ per cent) the volume of marsh gas required to render dangerous an air current of 30,000 cu.ft. is 30,000 ÷ 40 = 750 cu.ft. per min.

QUESTION—*What causes the variation of the temperature of the air when it is passing through the mine? Does such change of temperature affect the volume of air passing? Explain fully.*

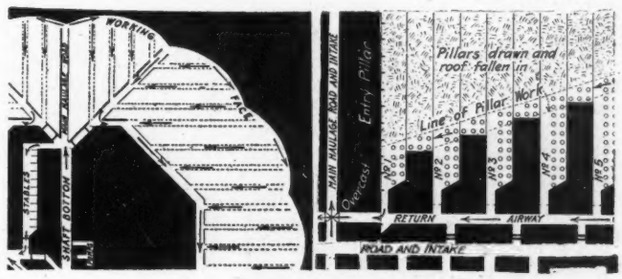
ANSWER—The temperature of a mine is quite uniform as compared with that of the outer atmosphere, summer and winter. While in summer the air entering the mine may be warmer than the mine air and give up some of its heat in passing through the mine, a more general condition is that when the outside air enters the mine at a lower temperature than that of the mine and absorbs heat in passing through the workings. The heat of the mine is the natural heat of the strata, which increases with the depth below the surface after the first twenty yards of depth.

In shaft mines the change of temperature in the air in circulation produces an air column that assists the circulation of the air in the winter season and often retards the circulation produced by a fan in the summer time. The action assisting or retarding the circulation, in fan ventilation, will depend on the position of the fan in respect to the mine openings and whether it is blowing or exhausting the air.

QUESTION—*Show clearly by means of sketches the two common methods of working a coal field, giving the conditions favorable to the application of these methods.*

ANSWER—In the accompanying figure are shown the longwall method of mining on the left and the room-and-pillar system of mining on the right. These are the two common methods employed in the mining of coal. The longwall method is particularly adapted to working thin seams of coal and when mining at great depths where the roof pressure is excessive. This method is also favorable to the complete extraction of the coal where conditions will permit of its adoption.

The room-and-pillar method shown on the right of the



SHOWING TWO COMMON METHODS OF WORKING

figure is applicable to the mining of coal under ordinary conditions and where the roof conditions will not permit of the use of the longwall method. The advancing system shown in the figure permits of quick returns on the capital invested in the development of the mine.

QUESTION—*In a certain mine there are two sections ventilated by separate air currents. The combined length of the intake and return in one of these sections is 6,000 ft.; the number of men employed is 110 and the number of mules, 10. In the other division, the length of the airway is 3,000 ft.; the number of men is 110; and the number of the mules 7. What will be the proper distribution of the air sent into the mine and what steps must be taken to secure such a distribution?*

ANSWER—The Illinois Mining Law requires an air volume of 100 cu.ft. per man and 500 cu.ft. per mule employed underground in a non-gaseous mine. To comply with this law will require 16,000 cu.ft. per min. as the circulation in the first mine where the length of the air-course is 6 000 ft.; and 14 500 cu.ft. per min. in the second mine where the length of the air-course is 3,000 ft. Other things being equal, the volume of air circulated in natural division, varies inversely as the square root of the length of the airway. The natural division of air between these two airways is, therefore, in the ratio $\sqrt{3}:\sqrt{6}$; or $1:\sqrt{2} = 1:1.4$, in favor of the shorter air-course. That is to say for every 100 cu.ft. of air passing in the first airway (6,000 ft. long), there will be 140 cu.ft. per min. passing in the second airway (3,000 ft. long). Therefore, in order to reduce the air volume in the shorter section and increase the circulation in the longer section where the larger qantity of air is required it will be necessary to install a regulator in the shorter air-course.

To Confer on Reduction of Freight Waste

Reduction of waste in freight transportation will be considered at a conference on June 13 at the Department of Commerce. F. R. Wadleigh, who is making the arrangements for the conference, states that he believes savings which will run into huge sums can be made if more attention is given to prompt loading and unloading of freight cars, to obtaining a higher average day's mileage, to the loading of cars to capacity, and to a large number of opportunities which are offered shippers and transportation companies to eliminate waste.

Call Strike at Railroad Brotherhood Mine

Union miners of the Coal River Collieries Co., West Virginia, are on strike, according to Secretary Fred Mooney, of District 17, United Mine Workers. The company's board of directors is headed by Warren S. Stone, president of the Brotherhood of Locomotive Engineers, and although the Brotherhood organization is not directly connected with the company, the latter is made up mainly of Brotherhood members.

The issue, according to Mooney, is unionization of the mine. He declared nearly all the employees had quit work because the company announced it would be run on an open-shop basis, and refused to recognize a local union.

Between sixty-five and seventy-five men are out and non-union miners are being employed to take their places.

At a conference between Mooney and Warren S. Stone, Brotherhood President and Chairman of the Board of Directors of the mining company last year, Mooney said Stone told him that the mines would operate on the union basis as soon as they were opened. On this understanding union miners on strike at other mines were given permits to work at the mines.

Mooney also declared that William Blizzard, president of sub-district No. 2, in whose territory the alleged strike has occurred, went to the mine to attempt to arrange a settlement, but that the management declined to see him.

At his office in Cleveland, May 29, Mr. Stone admitted that the mines were not fully unionized, but asserted that the men had his permission to join the union if they desired. He said he had received no reports on any strikes.

"We are paying the union scale in West Virginia," he said. "In east Kentucky, where the Coal River Collieries also have mines, the miners have not been organized for twenty years, but we are paying the going rate in eastern Kentucky."

Coal-Mine Fatalities in April Higher In Number and Ratio to Output

Accidents at coal mines during April, 1923, caused the death of 175 men, according to reports received by the Bureau of Mines from state mine inspectors throughout the country. This number cannot be compared with the 78 fatalities in April, 1922, because half of the mining industry was idle in April last year on account of the miners' strike. The fatality rates per million tons, however, are comparable; and the figures show a rate of 3.49 for April, 1923, as against 4.87 for April, 1922. In March, 1923, there were 168 fatalities, or 2.99 per million tons produced.

The figures for April have brought the total number of fatalities for 1923 to 851, indicating a death rate of 3.96 per million tons, as compared with 671 fatalities during the first four months last year, representing a rate of 4.04 per million tons.

The year's record to date for all fatalities from all causes shows that the fatality rate per million tons has been slightly reduced as regards haulage and falls of roof and coal, but that it is still above last year's record as regards explosions of gas and dust. These facts are indicated by the following figures showing the death-rates per million tons during the first four months of each year:

	1922	1923
Falls of roof and coal	1.902	1.753
Haulage	0.794	0.618
Gas and dust explosions	0.554	0.785
Explosives	0.180	0.168
Electricity	0.102	0.107

COAL-MINE FATALITIES DURING APRIL, 1923, BY CAUSES AND STATES

(Compiled by Bureau of Mines and Published by *Coal Age*)

State	Underground												Shaft				Surface						Total by States	
	Falls of roof (coal, rock, etc.).	Falls of face or pillar coal.	Mine cars and locomotives.	Gas explosions and burning gas.	Coal-dust explosions (including gas and dust combined).	Explosives.	Suffocation from mine gases.	Electricity.	Animals.	Mining machines.	Mine fires (burned, suffocated, etc.).	Other causes.	Total.	Falling down shafts or slopes.	Objects falling down shafts or slopes.	Cage, skip, or bucket.	Other causes.	Total.	Mine cars and mine locomotives.	Electricity.	Machinery.	Boiler explosions or bursting steam pipes.	Railway cars and locomotives.	Other causes.	Total.	1923	1922
Alabama	3		1					2					6										2		2	8	7
Alaska																										0	0
Arkansas	1												1													1	0
Colorado	1		2			1						1	5											2	2	7	1
Illinois	5		6							1			12													12	4
Indiana			2			4							6											1	1	7	0
Iowa																										0	0
Kansas																										0	0
Kentucky		2	5			1						1	9													9	13
Maryland																										0	0
Michigan																										0	0
Missouri	2												2													2	0
Montana																										0	1
New Mexico	2							1					3													3	2
North Dakota																										0	0
Ohio	6		2					1					9													9	1
Oklahoma																										0	2
Pennsylvania (bituminous)	16	9	1			1						1	28	1			1	1	1					1	2	31	18
South Dakota																										0	0
Tennessee																										0	1
Texas																1	1									1	0
Utah	1												1											1	1	2	1
Virginia	6		1										7													7	1
Washington	1												1													1	1
West Virginia	14	2	12			2		2		1			33						2					2	4	37	25
Wyoming	2												2													2	0
Total (bituminous)	60	13	32			9		6		2		3	125	1		1	2	3					2	7	12	139	78
Pennsylvania (anthracite)	10	5	5	2		7						2	31	1		1	2	2						1	3	36	0
Total, April, 1923	70	18	37	2		16		6		2		5	156	2		2	4	5				2	8	15		175	
Total, April, 1922	37	5	18		2	1		1		5		2	72					1		1		3	1	6			78

Howatism Is Rising Again in United Mine Workers' Organization

With the slack summer season have come indications of sporadic radical activity among the miners of the Kansas field. The most recent, and the most pronounced, was a meeting of the "Progressive Miners' Organization," at Franklin, near Pittsburg, May 29. Approximately 500 members of the northern Crawford County section of District 14, United Mine Workers, are reported to have attended, in defiance of a threat by the district board that they would be expelled. August Dorchy, vice-president of the district under the deposed Alexander Howat, was chosen a delegate to the "Progressive Miners'" conference at Pittsburgh, Pa., June 2 and 3.

Caleb Harrison, of Chicago, member of the Chicago machinists' union and representative of the "Progressive Miners'" committee, was the imported speaker. He had out his little hammer for John L. Lewis, international president, and Van R. Bittner, special representative of the United Mine Workers, while speakers from among the local miners directed their knocks at the district board. All united in an effort to make the Howat ghost walk again. It was as the bearer of a personal message "direct from Howat" that Harrison was advertised.

"The 'Progressive Miners'' movement is designed to put the Lewises and the Bittners where they belong," Harrison informed his hearers, "and Howat where he belongs. If you are thrown out of the organization, just consider yourselves members and support this move and soon men like Alex Howat will be at the head of the United Mine Workers, guiding it to success. Howat is more a member of the United Mine Workers today than Lewis, and he is the bigger man of the two." Harrison added that Howat will attend the conference in Pittsburgh and is a stanch supporter of the "Progressive Miners" movement as a means of ending the Lewis régime. He advocated a national labor party, and distributed a booklet by William Z. Foster, recently tried on a charge of criminal syndicalism, on "The Bankruptcy of the American Labor Movement."

Harrison denied the "Progressive Miners' Organization" is a dual organization to the United Mine Workers, and emphasized the importance of the "Progressive Miners" working within the United Mine Workers organization.

Miners who attended the meeting at Franklin were suspended from the union June 2, by the district board, which declared the "Progressive Miners" a dual organization to the United Mine Workers.

Public Contracting in Kentucky Gives Good Idea of Prevailing Prices in That State

Some contract business which has been placed in Kentucky during the past few days gives an interesting line on contract prices. The State Board of Charities and Corrections at Frankfort has bought coal for the state institutions, contracts having been awarded.

The Cornett Lewis Coal Co., Louisville, received a contract for approximately 6,500 tons of Harlan nut and slack at $2.25 a ton at mine, carrying freight rate of $1.79 a ton to Lakeland. The Frankfort Elevator Coal Co., Frankfort, operating mines at Beattyville and shipping by its own barge lines to Frankfort, took two contracts on a delivered basis, at $3.40 for the State Reformatory and $3.25 f.o.b. Frankfort, for the Feeble Minded Institute. The Harlan Coal Co., Louisville, received the Greendale contract at $2.40 at mine for Harlan run of mine, carrying a freight rate of $1.62 to Greendale. The R. C. Tway Coal Sales Co., Louisville, received the Lexington contract at $2.25 a ton at the mine, carrying $1.62 freight rate to Lexington.

The Belle Union Coal Co., operating in western Kentucky, received contract for 3,750 tons of western Kentucky pea and slack, $1.50 a ton at mine, to be shipped to Eddyville, on a freight rate of $1.47 a ton. The Gordon Mining Co., Madisonville, received the Hopkinsville contract, of 6,250 tons, at $1.85 a ton at mine, carrying freight rate of 79c. to Hopkinsville.

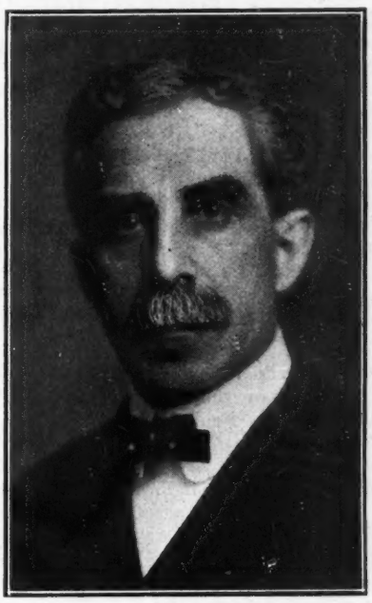
The Board of Education at Louisville also placed its contracts, which call for 4,106 tons of eastern Kentucky nut and slack at $1.96 a ton at mine, and 221 tons of eastern Kentucky lump at $3.06 a ton, carrying freight rate of $1.69 from mine to Louisville. The H. B. Jones Coal Co. received contract for 1,375 tons of eastern Kentucky nut and slack at $4.34 delivered and 228 tons of eastern Kentucky lump at $5.84 delivered.

Captain W. A. May Claimed by Death

Captain William A. May, president of the Pennsylvania Coal Co. and the Hillside Coal & Iron Co., died at his home in Scranton, Pa., June 1, after an illness of nearly three weeks. He was 72 years old.

Captain May was the son of Rev. Lewis and Louisa (Haine) May and was born in Hollidayburg, Blair County, Pa., Dec. 3, 1850. He received his early education in the public schools in the towns where his father's ministerial duties called the family. When he was but fourteen years of age his father died and three years later his mother was summoned by death.

He prepared for college at Dickinson Seminary, near Williamsport, where he was awarded the degree of bachelor of arts. While a seminary student he made a special study of civil and mining engineering and after leaving school he was given a position as rodman with the Hillside Coal & Iron Co.



WILLIAM A. MAY

Captain May matriculated at Lafayette College, graduating in 1876 as a civil engineer. He likewise received a degree of master of arts. After completing his education, Captain May returned to the Hillside Coal & Iron Co. as chief engineer.

Two years after rejoining the Hillside Coal & Iron Co. Captain May added to his duties those of chief engineer for the North Western Mining & Exchange Co. In 1883 he was made superintendent of the Hillside Coal & Iron Co. and served in that capacity until 1901, when he was made vice-president and general manager of the Pennsylvania Coal Co. and the New York, Susquehanna & Western Coal Co. In 1913 he became president of the Pennsylvania company and of the Hillside Coal & Iron Co.

Part of the training of Captain May as a handler of men was received as a member of the national guard of Pennsylvania. He enlisted as a private in the Thirteenth Regiment in February, 1878. Ten years later he was mustered out as captain of Company D. Captain May was the holder of a ten-year marksmanship medal and always retained an active interest in the regiment. He devoted much time and service to the erection of the Thirteenth Regiment Armory.

Besides his work in the coal industry, Captain May was identified with a number of the business industrial activities of Scranton. He was a director of the Third National Bank, a trustee of Lafayette College and of Dickinson Seminary; the Young Men's Christian Association and of Elm Park Church.

Captain May married Emma Louisa, daughter of Mr. and Mrs. B. L. Richards, of Williamsport. She survived together with one daughter, Mrs. Page, two brothers, George May of Williamsport, and L. H. May, of Forest City.

Navy Department Awards Coal Contracts

The Navy Department awarded contracts June 4 for more than 300,000 tons of bituminous and semi-bituminous coal required by navy yards and naval stations during the coming fiscal year, beginning July 1.

Awards made were: Boston, 30,000 tons, to W. A. Marshall & Co., New York, at $7.41 a ton; South Brooklyn, 9,000 tons, to George D. Harris, New York, $6.30; Iona Island, 2,000 tons, to George D. Harris, New York, $5.79; Lake Denmark, N. J., 1,800 tons, to George D. Harris, New York, $6.67; Lakehurst, N. J., 4,900 tons, to George D. Harris, New York, $6.15; Philadelphia, 45,000 tons, to Fidelity Coal Mining Co., Philadelphia, $5.83; Fort Mifflin, Pa., 450 tons, to George D. Harris & Co., New York, $5.41; Philadelphia, 20,000 tons, Morrisdale Coal Co., Philadelphia, $5.52 delivered at pier, $5.67 delivered at wharf.

Annapolis, Md., 35,100 tons, to Dexter & Carpenter, Inc., New York, $6.50; 1,650 tons to Hall Bros. & Co., Baltimore, $7.20; Annapolis, Md., 2,100 tons, to Hall Bros. & Co., Baltimore, $6; Washington, D. C., 300 tons, to Dexter & Carpenter, $5.92; Bellevue, 50 tons, Dexter & Carpenter, $5.92; Alexandria, 1,150 tons to Dexter & Carpenter, $6.32; Washington, D. C., 50,000 tons, Quemahoning Coal Co., Somerset, Pa., $6.29.

Indian Head, Md., 33,000 tons to Fidelity Mining Co., at $6.19 a ton; Indian Head, Md., 10,000 tons to Consolidation Coal Co., of Washington, at $7.30; Hampton Roads, 22,000 tons, to C. G. Blake Co., Cincinnati, $6.88; Norfolk Navy Yard, 45,000 tons to Fayette Smokeless Fuel Co., Mount Hope, W. Va., at $6.88.

Charleston, S. C., 10,000 tons to L. A. Snead Co., Washington, at $7.54; Pensacola, Fla., 8,700 tons to Adams, Rowe & Norman, Birmingham, at $3.03; Great Lakes, Ill., 2,000 tons at $2.65, and 30,000 tons soft screenings at $1.75 to Lake Export Coal Sales Corporation, Chicago; 400 tons screened lump coal over two inch screen to Cosgrove & Co., Johnstown, Pa., at $2.30.

Expect Big Turnout at Retail Convention

Reports from sub-committee chairmen throughout the country indicate a record attendance at the sixth annual convention of the National Retail Coal Merchants' Association, to be held at Scranton, Pa., June 25, 26 and 27, 1923. Reservations are now coming in as fast as they can be handled. They have been received from such wide separated points as Canada, Colorado and North Carolina.

Those who have accepted invitations to speak are F. R. Wadleigh, Federal Fuel Distributor; John Durkan, Mayor of Scranton; E. W. Parker, of the General Policies Committee, Anthracite Operators; George H. Cushing, editor of Cushing's Survey; and J. C. Bryden, chairman of the Bituminous Operators', Special Committee. Another speaker of national importance (to be announced later) is expected to address the meeting. A number of operators and newspaper men will be guests of the retailers.

Music is being arranged, a song leader has been engaged and novel entertaining features have been prepared.

Draft Tentative Plans for Certification Of Coal for Export

Coal exporters, railroad officials, representatives of testing laboratories and of the government had a conference with the Federal Fuel Distributor and the Bureau of Mines in Washington on May 24 to consider the possibility of working out a plan for the certification of coal for export.

It was tentatively agreed that a plan based upon the informal co-operation of the Bureau of Mines and the Department of Commerce might be worked out whereby the coal shipper and the railroad would note on the waybill the mine from which the coal originated. Inspectors would be provided at the various piers to record, from the notes thus provided on the waybills, a complete statement of the origin of the coal making up each cargo for export, which statement would be used as a government certificate showing the origin of the coal.

A pamphlet is to be prepared stating "in general terms the characteristics of the coal of each of the commercial districts exporting," which pamphlet, with more detailed information, is to be compiled by the Bureau of Mines and the Federal Fuel Distributor and is to serve as a guide to the buyer.

Participation is to be entirely voluntary, the cost to be paid by the exporters. The total cost to cover Norfolk, Baltimore, Philadelphia and Charleston is estimated at $24,680 per year.

Railroads Ask Chance to Solve Problems Without Fear of Confiscation

Adoption of a policy by the American people that will insure the railroads of this country fair treatment and enable them to work out their problems without fear of action "of a confiscatory nature" for a time at least was urged in a report filed June 4 with the U. S. Coal Commission by a special committee appointed by the American Railway Association to render such assistance as possible to the Fact-Finding Commission. The report supplements a preliminary one filed five months ago by the special committee of which J. E. Roberts, of Albany, N. Y., superintendent of transportation of the Delaware & Hudson Co., is chairman.

In concluding its report as to the causes of the fuel situation and possible remedies the report said:

"There can be no doubt that the railroads of the United States are vitally interested in the work of your commission. It has been said that the principal problem of the coal industry is the problem of distribution. Without committing ourselves to the absolute correctness of this statement, we are sensible of the fact that the coal industry cannot be put upon a sound basis acceptable to the American people unless coal is transported with reasonable promptness and in the most efficient manner. It is the task of the railroads to furnish this transportation. This task has been rendered difficult by certain features characterizing the production of coal which your commission thoroughly understands and which all students of the problem are endeavoring to eliminate.

"It is clear that if some method could be devised whereby the amount of coal which the country demands could be removed throughout the year in fairly constant quantities so that heavy seasonal movements would be avoided, the railroads of the country are sufficiently equipped to take care of the demands upon them in a satisfactory manner. Even if allowance is made for an increased demand for coal during the period of heaviest domestic consumption the railroads could meet the situation without serious cause for complaint. But the railroads do not feel that they are properly censurable for not being able to meet all the demands for transportation in years when strikes in the coal industry have stopped production for a considerable period, making it necessary to crowd a year's business into a few months and that too at a a time when there is the heaviest movement of other seasonal commodities.

"Of course the undertaking of the railroads to meet demands upon them must depend upon the ability of the railroads to increase their facilities as the business of the country increases. These facilities cannot be procured without the expenditure of new capital, which must come from the investing public. It is clear that capital will not be attracted to railroad securities unless there is a reasonable assurance that the investment is safe.

"These considerations lead us to suggest that there are two fundamental conditions which the public must establish before the problem of distributing coal will be solved. These are: First, fair treatment to the railroads under which they will be permitted to earn a fair return upon the value of their property fairly ascertained, and second, freedom from strikes, both in the coal and railroad industry, so that these two essential businesses may function without disturbing interruptions."

The report says that there has been a general increase in efficiency on the part of the railroads in freight transportation in recent years. In 1922, the report said, Class 1 railroads handled 19.2 per cent more revenue freight, measured in net ton miles, with 9½ per cent less freight-train miles than in 1914. In 1921 the performance was 7.7 per cent more freight traffic than in 1914 with 13½ per cent less train miles.

Coal Commission Hears Lewis on British Coal Situation; Data for July Report Nearly Complete

By Paul Wooton
Washington Correspondent of *Coal Age*

The coal industry in England is in a bad way, in the opinion of John L. Lewis, president of the United Mine Workers of America. The wage being paid mine workers in England, based as it is on the selling price of coal, is insufficient, Mr. Lewis told the President's Coal Commission, to allow the workers to live in other than a state of poverty. Mr. Lewis left the impression with the commission that the British producers are in no position to increase the price of coal. The situation, however, has been improved somewhat by the increased demand for British coal which has grown out of the occupation of the Ruhr.

Chairman Hammond and Dr. Smith, who represented the commission at the conference with the press Friday, would give little additional information as to what had been told them by the Mine Workers' president. They did state positively that there had been no discussion of the anthracite wage scale. One of the points which Mr. Lewis brought to the attention of the commission, Mr. Hammond revealed, was that of the relative productivity of the average mine worker in America as compared with the average mine worker abroad. Mr. Lewis declared that the American mine worker is several times as efficient as the foreign coal digger. He pointed out, however, that British coal mines are safer places to work in than are the mines in the United States. Mr. Lewis made the point that there must be closer co-operation between operators and their employees looking to the lowering of the accident hazard.

During his stay in Washington Mr. Lewis had no conference with the press. To the few newspapermen who were able to see him he made only perfunctory statements and indicated that he does not desire at this time to reply to the questions which naturally would be put to him by representatives of the press. He is to appear again, however, before the Coal Commission prior to the drafting of the anthracite report. It is known, however, that Mr. Lewis covered practically the entire ground covered by the anthracite operators and indicated the points of difference between the employers and the mine workers.

Anthracite Finances Elicit Interest

The commission now is busily engaged in digesting the important staff reports submitted on June 1. Particular care was taken with these reports, as they will furnish the basic information for the anthracite report. Much attention was given the report of Prof. J. H. Hollander, which deals with the financial aspects of the anthracite situation. In addition to the written report, Professor Hollander and members of his staff discussed the subject matter orally with the members of the commission.

The statistical data necessary for the July report are being tabulated rapidly and will be in final form within the next few days. The commission was in no position to make any deductions from the statistics on Friday. They still "point in all directions," Dr. Smith said.

Whether or not the separate branches of the coal industry are through throwing mud at each other, the commission is confident that it is to receive the constructive suggestions which each interest has promised. The railroads have submitted a statement which Chairman Hammond described as "constructive." At the press conference there was some discussion of a suggestion by Commissioner Potter of the Interstate Commerce Commission that the railroads be prepared at any time to furnish the cars necessary to transport 15,000,000 tons a week. Apparently Commissioners Hammond and Smith were not prepared to accept the practicability of such a plan.

Chairman Hammond reiterated his former statement that the commission probably will recommend a reduction in the freight rates on anthracite, but coupled with it a warning that a long period necessarily must ensue before any reduction could be put into effect, and even then the recommendation might not be followed. For these reasons he expressed the hope that the public would not be influenced to delay purchases of coal on the prospect of benefiting from a lower freight rate. Dr. Smith called attention to the fact that those who withheld purchases of coal when the bituminous rate reduction was under consideration were penalized heavily for so doing, since they had to pay much more for their coal after the reduction went into effect than would have been the case had they bought earlier. The man who fails to buy his coal early is likely to find himself in a predicament similar to that described in a Mother Goose rhyme which Dr. Smith paraphrases as follows:

This little pig went to market,
This little pig stayed at home,
This little pig got his winter's fuel.
This little pig got none.

Midwestern Retailers Disapprove of Trade Commission's Sanction of "Snowbirding"

Certain Middle Western retail coal interests are not at all hesitant about telling Herbert Hoover why the people of that region are not storing coal, as Secretary Hoover has urged. One of the reasons is interference in industry by the Federal Trade Commission, especially the commission's efforts to compel wholesale coal concerns like the Northwest docks to sell coal to "snowbirds." The Midwest Retail Coal Association, comprising many dealers in Missouri and Iowa, expresses itself to Mr. Hoover thus in a letter from E. J. Wallace, commissioner of the association:

"Acknowledging your circular letter of the 11th and your further letter of the 17th, will say that this association is doing everything possible to encourage dealers in the early storage and delivery of coal to their customers. Our efforts, however, are being stopped, our business is being ruined, by the unfair activities of the Federal Trade Commission.

"The commission insists that everyone has a right to buy coal and if people with no equipment and no bins can buy coal at the same price that merchants can who are put to the expense of storing coal, what encouragement is there to these dealers to store? The Federal Trade Commission tells us that we have no right to do anything to prevent anyone from buying coal and our dealers feel that the so-called clubbing together of coal is unfair competition, and the encouragement of this unfair competition by the Federal Trade Commission is going to cause the retail coal business to break down.

"I refer you in particular to some of the points filed in complaints by the Federal Trade Commission against the Northwestern Dock Shippers Association of Minneapolis. However, we are doing our best to get our dealers to stock, but when dealers won't store for the reasons given above, the ultimate consumer feels that he should not be in a hurry to do it."

Wadleigh Plans Encyclopedia of Standards And Specifications for Commodities

Specifications and standards to apply to all commodities moving in interstate or foreign commerce will be discussed at a conference to be held at the Department of Commerce on June 11. F. R. Wadleigh is in charge of the arrangements being made for the conference. Mr. Wadleigh is planning the issuance of an encyclopedia of specifications and standards. He believes it is possible to apply to most commodities the same principle which is working out so well in the simplification of specifications and standards for the commodities purchased by the government.

Shipping Board Opens Bunker Bids

Bids opened on May 31 by the U. S. Shipping Board at New York for furnishing bunker coal in quantities as required alongside vessels operated by the United States Lines at the Port of New York resulted in tenders ranging on a basis of $3.08@$4.55 per net at the mine.

The specifications called for coal from mine or mines heretofore classified as Pool 1, Pennsylvania or West Virginia, or coal under Navy Acceptable and supplementary lists, to be delivered alongside vessels in New York harbor as required. Bids were asked for six months and for one year. No specific tonnage was named but the successful bidder will not be required except with his consent to deliver in any one month in excess of 15,000 gross tons, the estimated maximum requirements. Bidders and prices received were as follows:

Cosgrove & Co., first six months, $6.50 per gross ton, f.a.s.; second six months, $7.06 per gross ton, f.a.s.

H. B. W. Haff, 75,000 gross tons, six months or one year, $7.35.

Penn Fuel Co., six months, $6.74; one year, $6.99.

W. A. Marshall & Co., 7,700 gross tons monthly for six months, $8.13; 6,000 gross tons monthly for year, $8.13, and 8,000 gross tons monthly for six months or one year, $7.40.

J. H. Weaver & Co., six months or one year, $7.20.

Steamship Fuel Corp., Pool 71, for one year, $7.34.

Seiler Coal Co., Pool 1, for six months or one year, $6.92.

Berwind-White Coal Mining Co., for six months or one year, $7.25.

Coleman & Co., 30,000 gross tons, for six months delivery, $7.52.

Roads Tell Governor Davis They Will Not Make Low Summer Rates on Kansas Coal

After the failure of Governor Davis' recent conference with coal operators, dealers, miners and railroads, dedicated to reopening the Kansas mines, some optimists maintained that the railroads still might be induced to establish emergency summer rates that would make possible a reduction in the price of coal, and thus encourage an increase in demand. The Governor put the question to the railroads. And the other day they answered him with a most emphatic no.

The railroad's statement was to the effect that "Kansas coal cannot be successfully stored; that to establish emergency freight rates in Kansas only would constitute undue tariff discrimination; that any reduction in freight rates would not cut the price of coal sufficiently to induce consumers to store coal during the summer, especially in view of the known fire hazard and the coal's inclination to slack, and finally that other fields are suffering as much as Kansas from an abnormally light summer demand."

Wadleigh Urges Householders to Lay in Coal Before Sept. 1

In a statement issued June 4, F. R. Wadleigh, Federal Distributor, reviews the efforts of national and state trade associations, public utilities and railroads to effect storage of coal for winter consumption between now and Sept. 1. The suggestion is made to the business man and the householder that they obtain their winter coal when it can be easily handled, and as an added precaution against transportation difficulties at a later date.

"Reports received," said Mr. Wadleigh, "indicate that many consumers are delaying their purchases of coal in the belief that the work of the U. S. Coal Commission will result in reductions in prices. While constructive recommendations based on an immense collection of data undoubtedly will be made in the report of the Coal Commission, it is pointed out that no legislative action can be taken until Congress meets in December.

"Considering the general situation today, and in view of the positive recommendations made by the Secretary of Commerce and the great national trade, transportation and public-utility bodies, it is difficult to see how the consumer with ordinary prudence and foresight can avoid following the advice given, that his winter supply of coal, whether for domestic or industrial use, be purchased and stored during the summer months."

Captain Samuel Hines Is Dead

Captain Samuel Hines, long and prominently identified with affairs in the anthracite industry, died at his home in Scranton, Pa., June 3, after a lingering illness. He was in his seventy-ninth year.

Captain Hines was born in Washington, D. C., July 21, 1843, and received his early education at the Washington Seminary and Union Academy.

During the Civil War he enlisted in the Union cause and was assigned to a position in the quartermaster's department as assistant to Captain H. B. Blood, with the armies operating against Richmond, Va.

Continuing in the service until the close of the war, Captain Hines accompanied Captain Blood to Mercer County, Pa., and located valuable deposits of coal in that section. Captain Hines supervised the construction of a breaker, built houses for miners and was the founder of the borough of Stoneboro, which he named after Amisa Stone. He organized and became the paymaster and general agent of the Mercer Coal & Iron Co.

In 1873 he went to Scranton to accept a position as general manager of the Hillside Coal & Iron Co. He figured prominently in the development of the coal industry of the section in and about what is now Forest City. The borough was named by Captain Hines.

After leaving the Hillside Coal & Iron Co. Captain Hines was associated with Dr. B. H. Throop and had charge of the development of the Borough of Throop. He also represented the firm of Price, Pancoast, Parker & Throop at Throop. He continued with these interests until falling health caused him to give up active work about five years ago.

Captain Hines married Miss Rose Nolan, of Hamilton, Canada, on Jan. 21, 1867. His wife died on May 21, 1921.

Supreme Court Rules in Coal Cases

In a decision read June 4 by Associate Justice McReynolds, the U. S. Supreme Court established the precedent that the federal government may be sued in a District Court for recovery of just compensation for commodities requisitioned under the war-time Lever Act in cases of direct requisition.

The case at issue was an appeal of the Houston Coal Co. from a decision of a District Court that it was without jurisdiction to try a suit for the recovery of additional compensation, under Section 10 of the Lever Act. The Navy Department had requisitioned coal from the Houston company, paying $4 per ton, the price fixed by the President under the Lever Act. The company filed suit in the District Court for the recovery of just compensation, which it alleged to be the difference between $4 per ton and the prevailing market price.

In a brief decision, the Supreme Court declared that the District Court did have such jurisdiction and that suit for direct requisition may be instituted in District Courts without the necessity of filing a claim with the Court of Claims.

In the case of Willard, Sutherland & Co. against the United States, appealed from the Court of Claims, the Supreme Court, in an opinion by Associate Justice Butler, affirmed the decision of the Court of Claims that the company has no cause for recovery from the United States. The company contended that the Navy Department in 1917 ordered it to deliver coal at $2.80 per ton in an amount exceeding its contract quality, and filed a claim for $3.65 per ton additional for this excess. The Supreme Court held that the contract was non-enforceable, because of lack of equity, but that because the company had complied with the department's demands, and delivered the coal, it could not recover. A similar decision was rendered in the case of Wm. C. Atwater & Co., Inc., against the United States, a claim caused by Navy coal orders on the same grounds as in the Willard case.

Sensational Testimony in West Virginia Injunction Case; Postponed to Oct. 1

The most startling development at the opening of the second week of the hearings before Judge George W. McClintic in connection with the twelve injunction suits brought against the United Mine Workers by approximately forty-five mine owners in West Virginia was the testimony of the Rev. J. E. Wilburn, mountaineer preacher of Blair, W. Va., now under sentence of eleven years in the penitentiary for his part in the slaying of John Gore, Logan County deputy sheriff, incidental to the armed march of 1921. The witness said on the stand that his lips had been sealed when he was on the witness stand at Charles Town last summer by the injunction of union officials not to "tell more than he had to" with an accompanying threat that "he would be killed on the witness stand."

Wilburn also testified that "when the armed men began to come to Blair, I saw Blizzard, Aug. 26, in an auto which stopped at the school house. There were 15 or 20 rifles in his car. Some 400 men were assembled. I saw him again Aug. 30 when he came in an auto. He had about 25 guns and ammunition. It was stored in my house, in my parlor. There were about 300 to 400 lb. of ammunition. It was distributed among the men."

Will Swanner, a son of J. W. Swanner, killed at Pomeroy, Ohio, told of the advice of a union official to union miners to get their "walking sticks" and he asserted that Fred Mooney, secretary of District 17, had given such advice in a speech at Clothier. The witness added that "walking sticks" were high-powered rifles.

H. W. Dawson, of Gallagher, in telling the story of the machine gun stolen from the railroad station at Pax during the trouble at Willis Branch and of its use in the fighting in Logan County, related a conversation he had with C. F. Keeney, president of District 17, in which the latter had said that the union had tried to settle the trouble in the industrial courts but had failed and now must settle it on the battlefield.

The plaintiffs in the injunction cases closed their presentation of evidence on May 29 after testifying that under the check-off system mine owners had to check-off the pay of non-union men as well as union men and also after introducing evidence of alleged union terrorism to support their contention that a permanent injunction should be granted in order to prevent further violence.

The last witness for the plaintiffs, D. H. Morton, of the American Eagle Collieries Co. and the Leevale Coal Co., stated that while he was associated with the Imperial Collieries Co. at Burnwell, the union had upon one occasion called a strike to prevent the union men from working with two non-union men. He also testified that it had been necessary to check-off for non-union men as well as union men and that if the non-union miners objected, they did not remain long in the locality.

After the miners' union had completed the introduction of testimony and had rested their case on May 31, it was decided by agreement between counsel to postpone arguments until Oct. 1, or until such a time as the record in the case might be printed. Although a number of witnesses were called upon to testify by the defense on May 31, including Samuel B. Montgomery, former Commissioner of Labor of West Virginia and the candidate of the United Mine Workers for Governor in 1920, such testimony was ruled out by Judge McClintic as irrelevant and improper. It will appear in the record as "avowal" testimony.

In ruling on the admissability of the testimony of Montgomery and others Judge McClintic said, "I don't think a judge is supposed to forget all he knows. I know that Mr. Montgomery was not in this armed march and I think it is going far afield to have him testify to the 'why' of it from what he has heard from his many friends in his extensive travels. I think though, it would be safe to say too, that the coal operators of Logan are hostile to the union and also that they have the right to say who shall or shall not come upon their property. We still hold in this state that a man has a right to guard his property and I hope that the law is never changed.

"This case comes under the heading of contracts. It is a question of outside influence. It is a question of taking a check-off to be spent for alleged illegal purposes. It is utterly out of the question to go into alleged illegal acts of officials to try and justify alleged acts of the United Mine Workers of America. In my opinion there was no justification in any form for these other illegal acts. The plaintiffs have alleged certain things. If the officers of the district, or those who knew what was in the minds of the officers, will testify, they may come up."

Brophy Alleges Violation of Civil Rights of Coal Miners in Pennsylvania

In a letter to the U. S. Coal Commission made public June 3 John Brophy, president of District 2, United Mine Workers, states that the civil liberties of coal miners have been violated in central and western Pennsylvania. Declaring he would give "typical cases of wrongs inflicted," Mr. Brophy asserted that the injuries suffered by miners and their families "are to be traced to the control exercised by a small group of coal operators not only over the work of their employees but also over the town where their properties are located, a monopolistic control over civic, political and human rights."

"The control exercised in non-union mining communities," said Mr. Brophy, "is not possible in any other kind of town. The company owns the houses and can throw you out if they disapprove of any of your actions. In some instances the company owns only the land upon which the miners erect their houses, of course the miners paying a ground rent. In case the owner of the building displeases the company in any way he is asked to remove his house."

"In many non-union towns the streets and roads and places of assembly are company owned and if the company disapproves of a person he is thrown out. . . . The company owns the doctor and the hospital, the store and the houses and the public road, the cemetery and the newspaper, and even the public post office.

"Operators of non-union mines not only reduce wages at any time they wish, but they even reduce wages without telling the men that they have done so. To illustrate—the wages of the miners of the Consolidated Coal Co., at Gray, Pa., were reduced in August, 1921, and they were not told that their wages had been cut. The company did not even post notices. The first the men knew about it was when they came to get their pay two weeks later. At this time instead of getting the pay they expected, they found their wages had been reduced from 34 to 50 per cent. Such examples could of course be multipled, but I cite this as a typical case of how miners are dealt with in non-union fields.

"We therefore ask that your body will recommend such action as will end the autocratic control now exercised by non-union coal operators to prevent their employees from joining labor unions and enjoying such other liberties as are guaranteed by the Constitution of the United States."

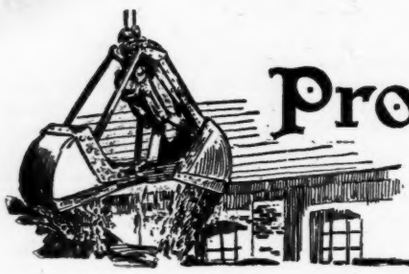
Open Bids on Coal for Ellis Island

For delivering alongside pier at Ellis Island during the year June 1, 1923, to May 31, 1924, from 12,000 to 15,000 gross tons of No. 1 buckwheat and 2,500 gross tons pea coal the following bids were received on May 31:

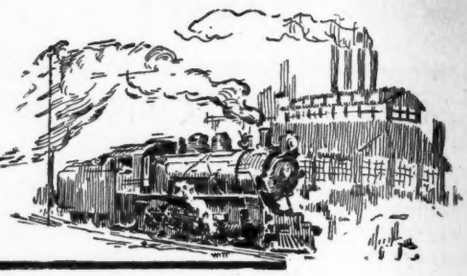
Martin F. Shea, buckwheat, $5.73; pea coal, $9.49. V. H. Youngman & Co., buckwheat, $5.70; pea coal, $8.95. Sealer Coal Co., buckwheat, $6.07; pea coal, $10.07. H. B. W. Haff, buckwheat, $5.87; pea coal, $8.82; Weston Dodson & Co., buckwheat, $7.05; pea coal, $10.05.

Based upon mine prices the bids for furnishing buckwheat coal ranged from $3.18 to $4.53 and the pea coal from $6.30 to $7.55 per gross ton.

THE INTERSTATE COMMERCE COMMISSION announces that further hearings on the proposed consolidation of railroads —Docket 12964—will be held before Commissioner Hall and Examiner Healey at Chicago, June 18; Buffalo, N. Y., June 21; Philadelphia, June 22; New York City, June 25.



Production and the Market



Weekly Review

Spot prices for soft coal continue to decline. Inquiries, however, are on the increase and a slightly better demand is found in some markets. Production in the week ended June 2 passed 11,000,000 tons, an increase of more than three-quarter million tons over the previous week. Anthracite production dropped below the current rate of 2,000,000 tons per week. Falling prices continue to force more soft-coal mines to close. Kentucky operators are cutting wages to meet the selling figures. Better car supply is reported from nearly all sections.

Production of soft coal for the first 125 days of 1923 was 221,048,000 net tons, larger than during any corresponding period of the past six years, with the exception of 1918, when it was 223,337,000 tons.

Pocahontas, Cambria, Somerset, southern Illinois, Standard and Hocking coals show advances in prices while there are decreases in Indiana, fourth and fifth veins, Pittsburgh, Kanawha and eastern Kentucky coals. *Coal Age* Index of spot prices of soft coal registered 215 on June 4, a decrease of two points, with an average price of $2.60.

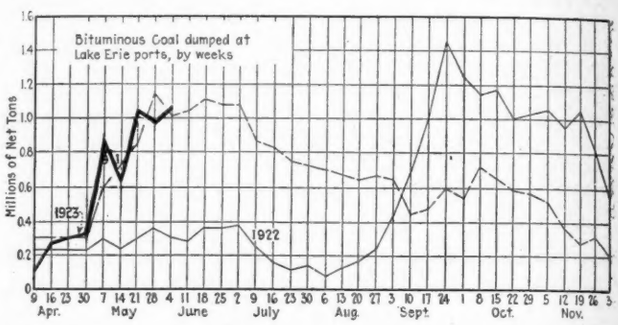
Shipping Board Bids Show Effort at Stiffening

Bids submitted to the U. S. Shipping Board at New York on May 31 for supplying Pool 1 or equivalent coal requirements of the Shipping Board vessels at that port for the year ended May 31, 1924, which ranged from $3.08 to $4.55 per net ton at the mine, indicate an effort to stiffen the market.

In the Middle West trade is quiet. A slight decrease in production followed the June 1 price schedule on domestic sizes in southern Illinois. The trade in New England has been affected by the quiet state of the textile industry. There are a few inquiries for coal for export, mostly for South America, and some chartering is reported. Baltimore reports heavy foreign shipments during the fourth week in May, loadings in the first twenty days of the last month having been 303,129 tons of cargo and bunker coal and 55,845 tons of coke.

Lake shipments are slowly increasing in volume. Up to May 28 approximately 1,400,000 tons of soft coal and 200,000 tons of anthracite had been unloaded at the Head-of-the-Lakes. Shipments of anthracite from Buffalo last week amounted to 72,600 net tons.

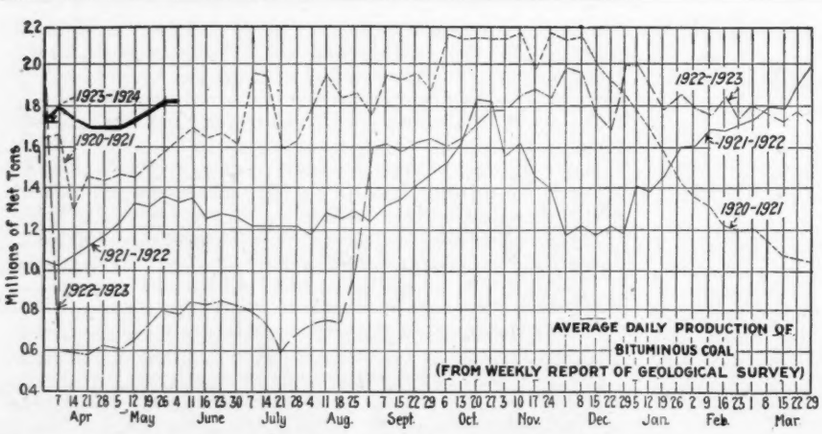
"The total soft coal raised during the week ended May 26 (including coal coked, lignite, and mine fuel), is estimated at 11,046,000 net tons," says the Geological Survey report. "This is a gain of 776,000 tons over the revised estimate for the week preceding. Early returns on car loadings during the week May 28-June 2 show 39,688 cars on Monday, and 33,826 cars on Tuesday, which are larger numbers than loaded on the same days



of the previous week. Loadings on Wednesday (Memorial Day) fell to 10,620 tons, and it appears that the holiday amounted to approximately one-third of a normal day. On this basis the average daily loadings for the present week are forecast at about the same level as last week. The present rate of soft-coal production is high and has been exceeded at this season only under war stimulation in 1918."

Dumpings at Hampton Roads for all accounts during the week ended May 31 was 331,725 net tons, as compared with 361,434 net tons the previous week.

Active demand for domestic sizes of anthracite con-



Estimates of Production

(Net Tons)

BITUMINOUS

	1922	1923
May 12	4,433,000	10,175,000
May 19 (b)	4,481,000	10,270,000
May 26 (a)	4,889,000	11,046,000
Daily average	815,000	1,841,000
Calendar year	162,496,000	221,048,000
Daily av. cal. year	1,305,000	1,772,000

ANTHRACITE

May 12	7,000	1,903,000
May 19	8,000	2,045,000
May 26	10,000	1,956,000
Calendar year	21,834,000	31,519,000

COKE

May 19 (b)	97,000	411,000
May 26 (a)	97,000	415,000
Calendar year	2,690,000	8,050,000

(a) Subject to revision. (b) Revised from last report.

tinues. Consumers are more concerned in the outlook for a continuation of operations after Aug. 31, when the present wage agreement expires. Because of this they are more anxious to obtain their winter coal than in previous summers. Quotations for independent stove and egg sizes are stronger in some sections than for chestnut.

No Midwest Awakening Yet

Coal trade in Chicago and throughout the Midwestern region remains quiet. The circular on Franklin County prepared coal has gone up from $4.10 to $4.35 and there is little buying. This naturally decreases the volume of screenings available, with a slight firming up of the price on those small sizes. Stocking is still confined to a few railroads and steam-coal consumption is only large enough to take the available screenings at low prices. Western Kentucky screenings are reaching Chicago at $1.40 and $1.50 and mine-run at less than $1.75. These coals cover a good deal of the immediate steam demand. Kentucky lump is going into the Northwest rail trade to a considerable extent, gaining business merely on a price basis.

A little better flow of smokeless into the middle West has been noticeable for a week or two. Dealers show some interest in getting it but there is no noticeable rise in price. Anthracite movement grows apace. Consumers are buying earlier this summer, for no further reductions in retail quotaions are expected. Stove is now bringing $16.25 in Chicago; chestnut, $16.10 and pea, $13.50.

In the southern Illinois fields railroad tonnage is light, helping to keep production down. Only three mines in the Du Quoin and Jackson County fields have been getting as much as three days a week.

A retail advance of 25c. a ton June 1 has reminded St. Louis people that the time to put in coal is now. A few are obeying the impulse and are putting in a little coal of the better grades. The country around St. Louis shows no demand for anything. It is noted that a good deal of coal from the St. Louis region is moving into the Northwest, taking some of the low-priced business to be had there.

Kentucky Trade Is Fair at Low Prices

While demand in western Kentucky is a little slow some of the operators admit that it is quite good for this season. But some operators are not quoting screenings in the

Current Quotations—Spot Prices, Bituminous Coal—Net Tons, F.O.B. Mines

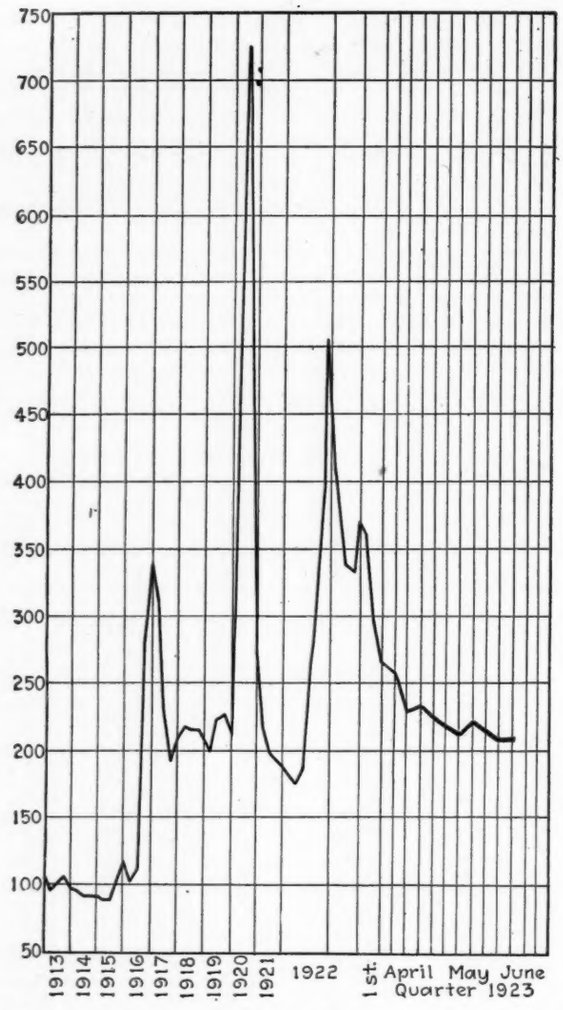
	Market Quoted	June 5 1922	May 21 1923	May 28 1923	June 4 1923†
Low-Volatile, Eastern					
Smokeless lump	Columbus	$3.35	$6.25	$6.25	$6.00@$6.50
Smokeless mine run	Columbus	3.00	4.05	4.15	**4.00@ 4.50**
Smokeless screenings	Columbus	2.85	3.70	3.60	3.35@ 3.85
Smokeless lump	Chicago	3.10	6.10	6.10	6.00@ 6.25
Smokeless mine run	Chicago	2.85	4.10	4.10	4.00@ 4.25
Smokeless lump	Cincinnati	3.40	6.25	6.25	6.00@ 6.50
Smokeless mine run	Cincinnati	2.85	4.25	4.25	*4.00@ 4.25*
Smokeless screenings	Cincinnati	2.75	4.25	4.25	*4.00*
*Smokeless mine run	Boston	6.05	6.85	6.35	6.25@ 6.50
Clearfield mine run	Boston	3.20	2.60	2.35	2.00@ 2.75
Cambria mine run	Boston	3.65	3.25	3.05	**2.75@ 3.50**
Somerset mine run	Boston	3.15	3.00	2.60	**2.50@ 3.25**
Pool 1 (Navy Standard)	New York	4.40	3.75	3.75	3.50@ 4.00
Pool 1 (Navy Standard)	Philadelphia	.....	3.80	3.75	*3.50@ 4.00*
Pool 1 (Navy Standard)	Baltimore	.....	.....	.....	.....
Pool 9 (Super. Low Vol.)	New York	3.90	2.90	2.90	2.75@ 3.00
Pool 9 (Super. Low Vol.)	Philadelphia	3.90	2.85	2.85	*2.50@ 3.20*
Pool 9 (Super. Low Vol.)	Baltimore	3.40	2.75	2.55	2.50@ 2.60
Pool 10 (H.Gr.Low Vol.)	New York	3.75	2.50	2.45	*2.25@ 2.50*
Pool 10 (H.Gr.Low Vol.)	Philadelphia	3.70	2.35	2.35	*2.10@ 2.50*
Pool 10 (H.Gr.Low Vol.)	Baltimore	3.35	2.30	2.15	2.15
Pool 11 (Low Vol.)	New York	3.60	2.05	2.05	*1.75@ 2.25*
Pool 11 (Low Vol.)	Philadelphia	3.25	2.05	2.00	*1.75@ 2.20*
Pool 11 (Low Vol.)	Baltimore	3.15	2.00	1.95	1.90@ 2.00
High-Volatile, Eastern					
Pool 54-64 (Gas and St.)	New York	3.65	1.85	2.00	*1.75@ 2.00*
Pool 54-64 (Gas and St.)	Philadelphia	.....	2.05	2.05	2.00@ 2.15
Pool 54-64 (Gas and St.)	Baltimore	3.25	1.80	1.75	1.75
Pittsburgh sc'd gas	Pittsburgh	.....	2.85	2.85	2.75@ 3.00
Pittsburgh mine run (St.)	Pittsburgh	.....	2.00	2.25	*2.15@ 2.25*
Pittsburgh slack (Gas)	Pittsburgh	.....	1.85	1.65	*1.50@ 1.65*
Kanawha lump	Columbus	3.15	3.25	2.75	2.50@ 3.00
Kanawha mine run	Columbus	2.85	2.20	2.05	1.90@ 2.20
Kanawha screenings	Columbus	2.65	1.75	1.75	*1.50@ 1.75*
W. Va. lump	Cincinnati	3.25	3.10	4.00	*2.75@ 3.50*
W. Va. Gas mine run	Cincinnati	3.25	1.80	1.85	*1.40@ 2.00*
W. Va. Steam mine run	Cincinnati	2.75	1.80	1.85	*1.40@ 2.00*
W. Va. screenings	Cincinnati	2.60	1.65	1.50	*1.35@ 1.50*
Hocking lump	Columbus	3.10	2.75	2.55	**2.35@ 2.90**
Hocking mine run	Columbus	3.00	1.95	1.90	*1.75@ 2.00*
Hocking screenings	Columbus	2.85	1.45	1.35	1.25@ 1.50
Pitts. No. 8 lump	Cleveland	.....	2.95	2.95	*2.45@ 3.25*
Pitts. No. 8 mine run	Cleveland	.....	$2.15	$2.15	*$2.00@$2.10*
Pitts. No. 8 screenings	Cleveland	.....	1.65	1.50	*1.40@ 1.55*
Midwest					
Franklin, Ill. lump	Chicago	.....	3.80	3.80	**3.75@ 4.35**
Franklin, Ill. mine run	Chicago	.....	3.10	3.10	3.00@ 3.25
Franklin, Ill. screenings	Chicago	.....	1.80	1.80	1.75@ 1.90
Central, Ill. lump	Chicago	.....	2.60	2.60	2.50@ 2.75
Central, Ill. mine run	Chicago	.....	2.10	2.10	2.00@ 2.25
Central, Ill. screenings	Chicago	.....	1.85	1.85	1.75@ 2.00
Ind. 4th Vein lump	Chicago	.....	3.35	3.35	3.25@ 3.50
Ind. 4th Vein mine run	Chicago	.....	2.85	2.85	*2.50@ 2.75*
Ind. 4th Vein screenings	Chicago	.....	1.85	1.85	*1.75@ 1.85*
Ind. 5th Vein lump	Chicago	.....	2.85	2.85	2.75@ 3.00
Ind. 5th Vein mine run	Chicago	.....	2.10	2.10	2.00@ 2.25
Ind. 5th Vein screenings	Chicago	.....	1.55	1.55	1.50@ 1.65
Standard lump	St. Louis	.....	2.25	2.25	**2.25@ 2.50**
Standard mine run	St. Louis	.....	1.80	1.80	1.75@ 1.90
Standard screenings	St. Louis	.....	1.50	1.50	1.50
West Ky. lump	Louisville	3.30	2.60	2.30	2.10@ 2.50
West Ky. mine run	Louisville	3.30	1.90	1.80	1.75@ 1.85
West Ky. screenings	Louisville	3.30	1.60	1.35	1.25@ 1.50
West Ky. lump	Chicago	3.40	2.60	2.35	2.25@ 2.50
West Ky. mine run	Chicago	3.40	1.80	1.35	**1.40@ 1.50**
South and Southwest					
Big Seam lump	Birmingham	2.20	2.70	2.70	**2.90@ 3.20**
Big Seam mine run	Birmingham	1.70	2.05	2.05	1.85@ 2.25
Big Seam (washed)	Birmingham	1.85	2.35	2.35	2.25@ 2.50
S. E. Ky. lump	Chicago	3.10	3.75	3.75	*3.00@ 3.50*
S. E. Ky. mine run	Chicago	3.10	2.35	2.35	2.25@ 2.50
S. E. Ky. lump	Louisville	2.85	3.75	3.75	*3.25@ 3.75*
S. E. Ky. mine run	Louisville	2.85	2.50	2.25	2.00@ 2.50
S. E. Ky. screenings	Louisville	2.85	1.90	1.65	**1.50@ 1.85**
S. E. Ky. lump	Cincinnati	3.25	3.35	3.75	*2.60@ 3.50*
S. E. Ky. mine run	Cincinnati	2.80	1.80	1.80	*1.40@ 1.85*
S. E. Ky. screenings	Cincinnati	2.75	1.60	1.55	1.25@ 1.85
Kansas lump	Kansas City	4.25	3.85	3.85	3.25@ 3.50
Kansas mine run	Kansas City	4.20	3.25	3.25	3.00@ 3.50
Kansas screenings	Kansas City	2.75	2.60	2.60	2.50@ 2.75

* Gross tons, f.o.b. vessel, Hampton Roads.
† Advances over previous week shown in **heavy type**, declines in *italics*.

Current Quotations—Spot Prices, Anthracite—Gross Tons, F.O.B. Mines

	Market Quoted	Freight Rates	Latest Independent	Pre-Strike Company	May 28, 1923 Independent	May 28, 1923 Company	June 4, 1923† Independent	June 4, 1923† Company
Broken	New York	$2.34	.....	$7.60@$7.75	.....	$7.75@$8.35	.....	$7.75@$8.35
Broken	Philadelphia	2.39	$7.00@$7.50	7.75@ 7.85	.....	7.90@ 8.10	.....	7.00@ 8.10
Egg	New York	2.34	7.60@ 7.75	7.60@ 7.85	$8.50@11.00	8.00@ 8.35	$8.50@$11.25	8.00@ 8.35
Egg	Philadelphia	2.39	7.25@ 7.75	7.75	9.25@ 9.50	8.10@ 8.35	9.25@ 9.50	8.10@ 8.35
Egg	Chicago*	5.09	7.50	8.25	12.00@12.50	7.20@ 8.25	*8.50@11.50*	**8.00@ 8.50**
Stove	New York	2.34	7.90@ 8.20	7.90@ 8.10	8.50@11.00	8.00@ 8.35	**8.50@11.25**	8.00@ 8.35
Stove	Philadelphia	2.39	7.85@ 8.10	8.05@ 8.25	9.25@ 9.50	8.15@ 8.35	9.25@ 9.50	8.15@ 8.35
Stove	Chicago*	5.09	7.75	8.25	12.00@12.50	7.35@ 8.25	*8.50@11.50*	**8.00@ 8.50**
Chestnut	New York	2.34	7.90@ 8.20	7.90@ 8.20	8.50@11.00	8.00@ 8.35	8.50@11.00	8.00@ 8.35
Chestnut	Philadelphia	2.39	7.85@ 8.10	8.05@ 8.15	9.25@ 9.50	8.15@ 8.35	9.25@ 9.50	8.15@ 8.35
Chestnut	Chicago*	5.09	7.75	8.25	12.00@12.50	7.35@ 8.35	*8.50@11.50*	**8.00@ 8.50**
Ranges	New York	2.34	.....	.....	.....	8.30	.....	8.30
Pea	New York	2.22	5.00@ 5.75	5.75@ 6.45	6.30@ 7.50	6.00@ 6.30	6.30@ 7.50	6.00@ 6.30
Pea	Philadelphia	2.14	5.50@ 6.00	6.10@ 6.25	7.00@ 7.25	6.15@ 6.20	7.00@ 7.25	6.15@ 6.20
Pea	Chicago*	4.79	6.00	6.25	7.00@ 8.00	5.49@ 6.03	7.00@ 8.00	**6.00@ 6.50**
Buckwheat No. 1	New York	2.22	2.75@ 3.00	3.50	2.75@ 3.50	3.50@ 4.15	*2.50@ 3.25*	3.50@ 4.15
Buckwheat No. 1	Philadelphia	2.14	2.75@ 3.25	3.50	2.75@ 3.50	3.50	2.75@ 3.50	3.50
Rice	New York	2.22	2.00@ 2.50	2.50	2.25@ 2.50	2.50	1.75@ 2.50	2.50
Rice	Philadelphia	2.14	2.00@ 2.50	2.50	1.75@ 2.50	2.50	1.75@ 2.50	2.50
Barley	New York	2.22	1.50@ 1.85	1.50	1.00@ 1.50	1.50	1.00@ 1.50	1.50
Barley	Philadelphia	2.14	1.50@ 1.75	1.50	1.15@ 1.50	1.50	1.15@ 1.50	1.50
Birdseye	New York	2.22	.....	2.00@ 2.50	.....	1.60	1.50@ 1.60	1.60

*Net tons, f.o.b. mines †Advances over previous week shown in **heavy type**, declines in *italics*.



Coal Age Index 215, Week of June 4, 1923. Average spot price for same period $2.60. This diagram shows the relative, not the actual prices on fourteen coals, representative of nearly 90 per cent of the bituminous output of the United States weighted first with respect to the proportions each of slack, prepared and run-of-mine normally shipped, and second, with respect to the tonnage of each normally produced. The average thus obtained was compared with the average for the twelve months ended June, 1914, as 100, after the manner adopted in the report on "Prices of Coal and Coke, 1913, 1918," published by the Geological Survey and the War Industries Board.

Louisville and some other markets, asserting that they would rather close down than sell at $1.25@$1.50 a ton. It is admitted that the screenings market is weak, and will be still weaker when eastern Kentucky screenings reach the bottom, which is expected within the next six weeks, if there is a heavy movement of prepared sizes to the Lake regions.

It is reported that the Illinois Central R.R. is buying a considerable amount of big lump and block coal for storage, figuring that such coal will not slack as badly as mine-run. Practically all small or wagon mines in western Kentucky are down. Better and more uniform grades of coal are reaching the market as a result.

Northwest Has Plenty of Coal

The Northwest evidently is the place to sell coal just now. Rail shippers are all trying their best to get a strangle hold on the available business and the docks continue to receive a heavy stream of fuel by vessel and to vie for trade by making prices attractive. The result is more business is being done in Minnesota, upper Michigan and in Wisconsin than anywhere else. There is even a threat that coal will be shipped into that region from fields that never before sold much of their output there—Arkansas, notably.

West Still Marks Time

Around Kansas City there is little doing in coal. However, an advance of 50c. on Arkansas semi-anthracite served to remind the public that coal is about as low now as it ever will be. Kansas coals remained at the old circular.

In Salt Lake City business is poor. Summer is on in earnest with a consequent slump in all retail business. Even the little day-to-day business that kept the market alive during the past few weeks has disappeared. Operators deny that there will be any further drop in prices. Utah lump now retails at $9 and nut at $8. The busiest mines are getting only about two days running time a week.

In Colorado lignite advanced 25c. June 1, making lump $3@$4, mine-run, $2.50 and slack, $1.65@$1.80. Colorado bituminous lump sells for $5.25; nut, $4.75; mine-run, $4.25 and slack is in demand for steam purposes at $3. The coal business generally has shown a little sign of picking up.

Quietude Pervades Ohio Market

In Ohio the situation is quiet. The smokeless market at Cincinnati holds steady. Retail conditions are excellent, one estimate being that there was treble the business done last month as against May of last year and double that of May in the preceding year. At Columbus the steam trade is showing the biggest slump, while the domestic trade is not at all active. All steam grades are weak and low prices are often quoted in order to dispose of distress cargoes. Steam users whose contracts expired on April 1 have been slow to renew them, believing they will be able to buy in the open market at low figures. Domestic trade is active in the fancy grades of Pocahontas and other smokeless coals.

During the week ended May 26 production in the eastern Ohio district was 424,000 tons, 55,000 tons more than in the preceding week, and the high record tonnage for the present year. Railroad fuel and lake shipments provide the main outlet for eastern Ohio coal at this time. Steam consumers continue to supply their wants in the open market. The retail trade is quiet, although domestic consumers are laying in at least a part of their winter coal now.

Quotations at Cincinnati on June 4 for West Virginia 2-in. lump were $2.75@$3 and for southeastern Kentucky 2-in. lump $2.60@$3, as compared with $3@$3.50 for both coals last week.

Slightly increased output in the Pittsburgh district is attributed to heavier movement in the Lake trade, while the steel industry continues to run at record rate. There is sharp competition in Lake coal and close prices are being made, buyers being in the mood to drive bargains. Lake coal in prompt lots is generally quotable at $2.40@$2.60, this being for three-quarters steam.

Little Change in New England Market

In New England the market shows little change from a week ago. The Pennsylvania grades still have the call on what scattering purchases are made, and while firmer prices were anticipated they have not yet materialized. Apparently there is as much medium to good grade steam coal offering from central Pennsylvania as a month ago, although a few specialties are sold up for 30-day periods. Even in the few cases where operations are well supplied with spot business there are disappointing variations in output that make it difficult to forecast production a month ahead. In general the market is somewhat affected by the quiet state of the textile industry.

Due to transportation difficulties on certain of the routes all rail there is continued heavy movement of both high and low volatiles via the Philadelphia and New York piers. The Philadelphia & Reading Ry. is especially loaded with spot bituminous tonnage, and to such extent is this true that barges released by the light movement of anthracite are being diverted into the soft-coal trade. The tonnage dumped during June doubtless will run into unusually high figures.

At present quotations Cambria coals can be laid down at so many New England points at 50c.@$1 less than Pocahontas and New River that cargoes of the latter for distribution inland have been growing infrequent. Prices are

nominally $8@$8.25 per gross ton on cars Boston, Providence and Portland, but it is expected that when low-cost cargoes begin to arrive there will be a material reduction in this figure. A reasonably good tonnage that last year was obtained by the Southern agencies has this year been supplied from central Pennsylvania, and unless a marked reduction in asking prices of smokeless coals is made soon there will be only light business left for Hampton Roads shippers.

At Norfolk and Newport News spot coal continues to accumulate. Lack of market is now the acknowledged reason, and neither the export nor the New England market is counted upon for much assistance the next 30 days. Prices are nominal; while $6.25@$6.50 is the level quoted it is known that desirable coals can be bought at 25c.@50c. less. Car service has improved materially, and instances of less than 50 per cent output can no longer fairly be attributed wholly to transportation disability.

Slight Improvement at New York

Accumulations at the New York tidewater piers on June 1 were 2,171 cars, as compared with 2,297 cars the week previous. Demand was slow but some shippers were able to see a slight improvement. The better grades were scarce. At Philadelphia there were signs of betterment, the situation there as well as at New York having been helped materially by the Lake trade and larger shipments into New England. Open-market buying prevails at Baltimore. There is plenty of coal, due to heavy output and good car supply.

Western markets and the Lakes have been getting most of the coal produced in the Pocahontas and Tug River fields during the past few weeks, but with better car supply more of smokeless mine-run is now going to tidewater.

There is scarcely any demand for steam coal in the spot market at Birmingham. Bunker business is light. Domestic business is ample to absorb production of this class of coal.

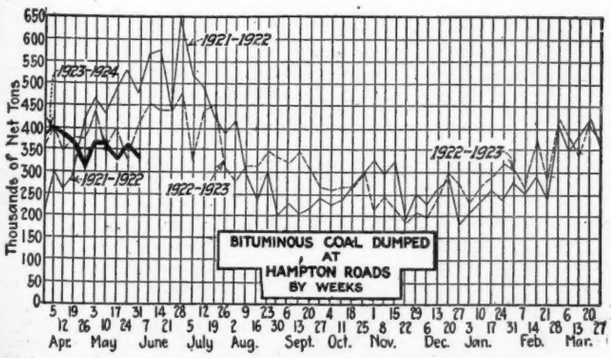
Lake Business Nears Full Speed

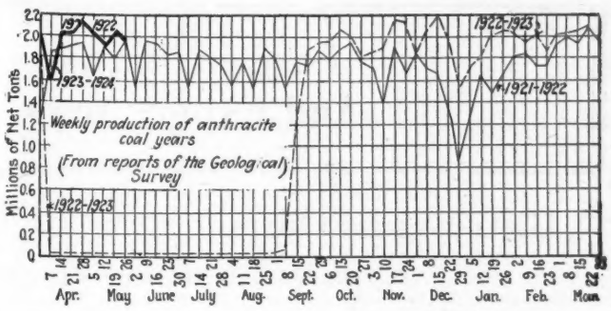
The lake season is nearly in full swing. Shipments are almost normal, 156 cargoes having been unloaded at the Head-of-the-Lakes up to May 28, fifty-six of these during the week ended May 26. Receipts at Milwaukee also have been heavy but outgo from the docks has been light, due to slow buying of dock fuel. Contracting for lake shipment in the Columbus market is not active, but loadings and movement is generally good.

Lake dumpings for the week ended June 4 was 1,049,763 net tons of cargo coal and 51,456 net tons of fuel coal, as compared with 884,538 net tons cargo coal and 45,661 net tons fuel coal the previous week. Total dumpings for the season is 5,299,364 net tons cargo coal and 237,466 net tons fuel coal.

Anthracite Consumers Ordering Early

Consumers for the most part are making every effort to put their winter supply of domestic anthracite coals in bins before the expiration of the miners' wage agreement, Aug. 31. So far as possible they do not propose to find it necessary to use substitutes, as some of them did last winter. Egg and stove are in heavier demand in the New York market than any of the other sizes. Philadelphia dealers have been unable as yet to make much headway in stocking their yards, except with an occasional accumulation of pea coal.





Shipments to Baltimore have been slow for a week or more and the small surplus in a few yards has been about wiped out. Heavy demand continues at Toronto, retail dealers having plenty of orders on hand to absorb receipts.

"Production of anthracite in the week ended May 26 was 3 per cent less than in the week preceding," says the Geological Survey. "The nine principal carriers of anthracite reported loading 37,394 cars, from which it is estimated that the total output, including mine fuel, local sales and the product of dredges and washeries, was 1,956,000 net tons. The decrease was chiefly due to a low rate of production on Monday, May 21. On the other days of the week the output averaged more than 6,200 cars daily.

"Preliminary reports of car-loadings in the week May 28-June 2 show 5,935 cars on Monday, 6,038 on Tuesday, and none on Wednesday (Memorial Day). On account of the holiday the total output for the week will be much lower than in recent weeks."

Coke Output Again Gains Slightly

Production of beehive coke for the week ended May 26 is estimated by the Geological Survey at 415,000 net tons. This is an increase of 4,000 tons when compared with the previous week's output. Cumulative output of beehive coke for the present year to date is 8,050,000 tons which is 5,360,000 tons ahead of 1922, 4,921,000 tons ahead of 1921, 892,000 tons ahead of 1922, 4,921,000 tons ahead of 1921, 892,000 tons behind 1920, and 332,000 behind 1919.

How the Coal Fields Are Working

Percentages of full-time operation of bituminous coal mines, by fields, as reported by the U. S. Geological Survey in Table V of the Weekly Report.

	Jan. 1 to Apr. 1, 1922 Inclusive	Sept. 5 to Dec. 30, 1922 Inclusive	Jan. 1 to May 19, 1923 Inclusive	Week Ended May 19, 1923
U. S. Total	55 7	....	....	....
Somerset County	74.9	36.3	36.6	59.4
Panhandle, W. Va.	51.3	57.3	56.7	57.7
Westmoreland	58.8	65.8	57.4	73.8
Virginia	59.9	55.7	57.1	59.8
Harlan	54.8	22.1	21.1	33.7
Hazard	58.4	16.4	25.0	38.0
Pocahontas	60.0	36.6	38.9	49.5
Tug River	63.7	28.8	36.4	45.1
Logan	61.1	26.2	31.5	31.0
Cumberland-Piedmont	50.6	31.7	49.2	47.7
Winding Gulf	64.3	30.4	36.1	42.3
Kenova-Thacker	54.3	42.4	37.3	47.1
N. E. Kentucky	47.7	28.4	29.8	29.8
New River	37.9	31.6	37.4	41.9
Oklahoma	59.6	59.1	45.2	41.1
Iowa	78.4	75.9	71.6	59.0
Ohio, Eastern	46.6	40.8	38.0	51.7
Missouri	66.8	76.3	70.1	64.4
Illinois	54.5	49.9	43.5	33.4
Kansas	54.9	55.9	45.8	40.3
Indiana	53.8	37.7	47.5	31.5
Pittsburgh†	39.8	41.2	38.9	56.3
Central Pennsylvania	50.2	53.4	49.7	59.3
Fairmont	44.0	35.5	40.2	69.3
Western Kentucky	37.7	32.4	31.9	28.4
Pittsburgh*	31.9	56.1	63.2	79.3
Kanawha	13.0	15.6	24.3	25.6
Ohio, Southern	24.3	38.1	30.6	26.4

* Rail and river mines combined.
† Rail mines.

Car Loadings, Surplusages and Shortages

	Cars All Cars	Loaded Coal Cars
Week ended May 19, 1923	991,797	181,599
Previous week	974,531	175,158
Same week in 1922	780,953	81,456

	Surplus Cars All Cars	Surplus Cars Coal Cars	Car Shortage	
May 21, 1923	22,700	2,775	20,585	14,620
Same date in 1922	329,634	208,691	.....	.....
May 14, 1923	18,419	2,776	23,761	15,653

Foreign Market And Export News

British Coal Output Nears High Record; Exports Continue Heavy

Coal production in Great Britain during the week ended May 19 was 5,797,000 tons, says a cable to *Coal Age*. This was an increase of 194,000 tons over the previous week's output, and but 28,000 tons below the output for the week of April 21, 5,825,000 tons the record for the post-war period.

Collieries in South Wales are heavily booked for this month and there have been inquiries for the last half of the year.

During the week ended June 2 coal exports were as follows, in tons:

From the Tyne district	7,104
From the Mersey district	6,392
From the South Wales district	19,609

Vice-Consul Albert W. Scott, at Hull, in a report to the Department of Commerce, at Washington, says that during March last, the coal exports from Hull totaled 404,303 tons, as against 174,639 tons in March last year; from Immingham the total was 230,056 tons, against 88,980 tons; from Goole, 153,912 tons, against 96,656 tons; from Grimsby, 56,703 tons, against 31,959 tons.

A newspaper dispatch states that Sir D. R. Llewellyn and H. H. Merritt, South Wales coal operators, are on their way to America to arrange contracts for supplying Welsh anthracite to American and Canadian buyers, and that they may consider the advisability of erecting plants for handling Welsh anthracite in New York, Montreal and Quebec.

Less Vigor at Hampton Roads

Activities at Hampton Roads lacked vigor last week, dumpings dropped and inquiries slackening. Prices held fairly firm, however, because of diminishing stocks at port.

Export business showed a decrease, while no new contracts for foreign shipments were in prospect. The outlook indicated a further reduction in movement to foreign ports. Coastwise business was slack, and bunkers held fairly regular.

Lack of demand for high volatile coals was one of the features of the market, the price dropping to the lowest level of the year. Heavy movement of the Norwalk & Western and Chesapeake & Ohio by rail to the West cut down the supplies here. The tone of the market was moderately strong.

United States April Coal Exports

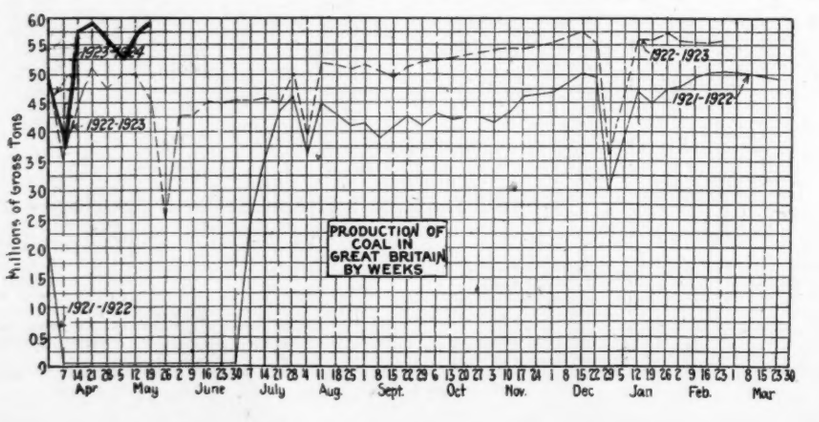
(In Gross Tons)

Coal	1922	1923
Anthracite	109,290	421,922
Bituminous	714,995	1,384,879
Exported to:		
France	.....	175,518
Italy	57,426	60,478
Netherlands	.....	19,239
Other Europe	9,931	96,415
Canada	453,406	889,900
Panama	9,390	9,800
Mexico	16,217	11,440
Br. W. Indies	15,643	11,811
Cuba	47,144	51,713
Other W. Indies	21,313	9,517
Argentina	.....	11,553
Brazil	38,864	16,107
Chile	14,902	.....
Egypt	11,246	2,569
French Africa	13,706	9,019
Other countries	5,821	9,800
Coke	28,413	201,788

United States April Exports by Custom Districts

(In Gross Tons)

	Anthracite	Bituminous	Coke
Maine and New Hampshire	1	.....	608
Vermont	2,343	997	1,469
St. Lawrence	160,276	206,573	2,265
Rochester	5,081	32,262	103
Buffalo	239,721	317,291	36,816
New York	5,913	211	726
Philadelphia	5,293	46,532	71,796
Maryland	.....	234,122	56,467
Virginia	2,678	189,594	.....
North Carolina	.....	8,006	.....
Florida	.....	6,161	1,879
Mobile	.....	1,051	988
New Orleans	1	542	1,197
San Antonio	469	27	4
El Paso	91	3,070	1,104
San Diego	.....	5,663	.....
Arizona	.....	.....	6,401
Los Angeles	45	.....	55
San Francisco	.....	.....	6
Washington	9	921	.....
Dakota	.....	4,286	405
Duluth and Superior	.....	2,951	65
Michigan	.....	189,640	18,473
Ohio	1	134,979	961
Totals	421,922	1,384,879	201,788



United States March Coal Imports

(In Gross Tons)

	1922		1923
Anthracite	25		33,252
Bituminous	118,564	free	151,005
		dutiable	168,936
Imported from:			
United Kingdom	4,100		137,688
Canada	104,101		168,936
Japan	313		.....
Australia	10,010		13,311
Other countries	40		6

Export Clearances, Week Ended June 2, 1923

FROM BALTIMORE

	Net Tons
For Argentine:	
Br. SS. Beechpark, for Argentine	7,922
For France:	
Br. SS. Furkestan, for France	7,227
Bu. SS. Salawati, for France	9,099
Ital. SS. Robinia, for France	7,074
Gk. SS. Melpo, for France	7,511
Nor. SS. Louise Neilsen, for France (coke)	5,975
For Germany:	
Br. SS. Eastgate, for Germany	7,559
Br. SS. Asheworth, for Germany	7,373
For Greece:	
Ital. SS. Aussa, for Greece	8,535
For Holland:	
Nor. SS. Moldegaard, for Holland	5,321
For Italy:	
Ital. SS. Finme, for Italy	10,208
Ital. SS. Concordia, for Italy	10,345
For Venezuela:	
Am. Schr. Maud M. Morey, for Venezuela (coke)	962

FROM HAMPTON ROADS

For Brazil:	
Br. SS. Irish Monarch, for Rio de Janeiro	5,616
For Canada:	
Br. SS. Wyncote, for Three Rivers	4,207
For Cuba:	
Nor. SS. Jacob Christensen, for Havana	5,781
For France:	
Br. SS. Illingworth, for Dunkirk	8,469
For Italy:	
Ital. SS. Bagnolii, for Porto Ferrajo	8,315
Ital. SS. Cloutsham, for Porto Ferrajo	6,970

Hampton Roads Pier Situation

	May 24	May 31
N. & W. piers, Lamberts Pt.:		
Cars on hand	1,037	1,218
Tons on hand	64,333	74,173
Tons dumped for week	102,909	103,538
Tonnage waiting	6,200	13,875
Virginian Ry. piers, Sewalls Pt:		
Cars on hand	1,699	974
Tons on hand	95,400	111,980
Tons dumped for week	125,080	111,375
Tonnage waiting	16,118	10,073
C. & O. piers, Newport News:		
Cars on hand	12,052	975
Tons on hand	68,135	55,235
Tons dumped for week	94,720	81,270
Tonnage waiting	5,300	23,110

Pier and Bunker Prices, Gross Tons

PIERS

	May 26	June 2†
Pool 9, New York	$5.35@$5.75	*$5.25@$5.75*
Pool 10, New York	4.35@ 5.25	**4.50@ 5.25**
Pool 11, New York	3.75@ 4.50	3.75@ 4.50
Pool 9, Philadelphia	5.85@ 6.15	*5.80@ 6.15*
Pool 10, Philadelphia	4.95@ 5.45	*4.90@ 5.45*
Pool 11, Philadelphia	4.00@ 4.55	*3.90@ 4.50*
Pool 1, Hamp. Roads	6.75@ 7.00	*6.50@ 6.75*
Pools 5-6-7, Hamp. Rds.	5.00@ 5.25	*4.85@ 5.00*
Pool 2, Hamp. Roads	6.50@ 6.75	*6.25@ 6.40*

BUNKERS

Pool 9, New York	5.65@ 6.05	*5.55@ 6.05*
Pool 10, New York	4.65@ 5.55	4.80@ 5.55
Pool 11, New York	4.05@ 4.80	4.05@ 4.80
Pool 9, Philadelphia	6.10@ 6.30	*6.05@ 6.25*
Pool 10, Philadelphia	5.10@ 5.85	*5.05@ 5.80*
Pool 11, Philadelphia	*4.25@ 5.00*	*4.20@ 4.90*
Pool 1, Hamp. Roads	6.75@ 7.00	*6.50@ 6.75*
Pool 2, Hamp. Roads	6.50@ 6.75	*6.25@ 6.40*

Current Quotations British Coal f.o.b. Port, Gross Tons

Quotations, by Cable to *Coal Age*

	May 26	June 2†
Admiralty, large	41s.@42s.6d.	**42s.6d.**
Steam smalls	30s.@32s.6d.	**32s.6d.**
Newcastle:		
Best steams	32s.6d.@34s.	*30s.@32s.*
Best gas	32s.6d.@35s.	*32s.@34s.*
Best bunkers	33s.6d.@35s.6d.	*29s.@32s.*

†Advances over previous week shown in **heavy type**, declines in *italics*.

News Items From Field and Trade

ALASKA

The Secretary of the Interior has authorized the **construction of a spur 4¼ miles long from the Matanuska branch of the Alaska Railroad to what are known as the Moose Creek coal mines** in the Matanuska field. These mines are said to contain a good quality of steam coal suitable for export and for use on the government railroad.

COLORADO

Colorado produced more coal during the first quarter of this year than during a similar period of 1922. State Coal Mine Inspector Dalrymple's report up to April 1 showed 15 out of 20 coal counties had increased their outputs—notably Las Animas County, with an increase of 282,391 tons. The consolidated report follows:

Counties	Total Tonnage.	Inc.	Dec.
Boulder	247,812	.....	57,785
Delta	26,150	.....	2,093
Elbert	1,850	1,018	.....
El Paso	153,235	15,359	.....
Fremont	206,066	35,792	.....
Garfield	7,666	1,405	.....
Gunnison	167,859	37,179	.....
Huerfano	638,696	32,828	.....
Jackson	19,152	6,408	.....
Jefferson	67,802	7,947	.....
La Plata	39,027	7,094	.....
Las Animas	1,134,701	282,391	.....
Mesa	47,992	13,766	.....
Moffat	655	.....	12
Montezuma	1,175	.....	981
Montrose	298	.....	364
Pitkin	676	66	.....
Rio Blanco	1,911	183	.....
Routt	183,809	11,968	.....
Weld	590,656	162,343	.....
Totals	3,537,188		

Total production Jan. 1 to March 31, 1922	2,982,676
Increase, 1923	554,512
Average number of men employed in and about mines	13,710
Number of days worked per mine	57.5

ILLINOIS

An explosion of powder occurred on the surface of mine No. 14 of the Old Ben Coal Corporation at Buckner recently. The blast happened about 8:10 a.m. and while a number of men were working at different places on top, none was seriously injured. Construction work was going on at the mine at the time and a little damage was done to top buildings. The explosives were stored at the time in a temporary shed near the mouth of the shaft and as no caps or detonators of any kind were near the spot, the cause of the blast remains a mystery.

The U. S. Army made a few small contracts for Middle Western, Ohio, Kansas and Kentucky coal after an opening of bids in Chicago May 22 as follows: Thirteen thousand tons of central Illinois screenings for the Rock Island arsenal from the Penwell Coal Mining Co., of Pana, Ill., $1.75; 1,000 tons of Standard district lump for Fort Snelling, Minn., from the Egyptian Coal & Mining Co., of St. Louis, Mo., $2.42; 877 tons of Pittsburgh No. 8 mine-run for a point in Ohio from the East Coal Co., of Chicago, Ill., $2.25; 305 tons of western Kentucky No. 9 mine-run for Camp Knox, Ky., from the East Coal Co., of Chicago, Ill., $2.08; 400 tons of Hocking mine-run for Fort Hayes, Ohio, from the General Hocking Fuel Co., $2.30; 1,500 tons of Linn County, Kansas, mine-run for Fort Leavenworth, Kan., from the Superior Fuel Co., of Kansas City, Mo., $2.39; 560 tons of Linn County mine-run for Fort Riley, Kan., from the same concern at the same price; 3,000 tons of central Illinois mine-run for the Rock Island arsenal, from the Bickett Coal & Coke Co. of Chicago, $2.65.

George F. Getz, president of the Globe Coal Co., of Chicago, suffered a broken arm, severe scalp wounds and other cuts and bruises May 28 when a woman drove her car into a taxicab in which Mr. Getz was riding.

N. H. Kendall, secretary of the Chicago Coal Merchants Association for several years, has resigned and on June 1 became manager of domestic sales for the Rialto Coal Co., of Chicago.

INDIANA

Reviewing decisions of the Public Service Commission since 1903 to indicate a depressed character of exsting intrastate freight rates on coal in Indiana, **representatives of the railroads have brought the coal-rate fight to a close.** They attacked in every way the contention of the Indiana State Chamber of Commerce and manufacturers throughout the state that the rates from Indiana mines to points within the state are lower than interstate rates and therefore discriminatory. Members of the commission will review transcripts of the evidence on both sides of the question which has been presented during the four days and base their ruling on it. If all pleas of the State Chamber and the various industries for a statewide readjustment are granted, an average reduction of 10 per cent will be made. If the arguments of railroad attorneys are upheld the rates will remain unchanged. Guernsey Orcutt, of Pittsburgh, and L. P. Day, of Chicago, representing all the railroads serving Indiana, presented evidence at the close of the hearing to show that the railroads buy enormous quantities of coal and supplies in Indiana and that those roads whose traffic consists chiefly of coal transportation are operating at a deficit. They endeavored to show that intrastate rates are reasonable and that the advantage lies with the Indiana producers rather than with Illinois, Ohio, Kentucky and West Virginia mine operators, who the State Chamber declared profited by the difference in rates. "The carriers view with apprehension a demand at this time for reduced coal rates in Indiana because those rates did not bear the full measure of past advances applied to rates in other states," Mr. Orcutt said. "Also labor organizations are now agitating further advances in wages and the present rates cannot be said to be reasonably compensatory to the carriers." R. B. Coapstick, traffic manager and attorney for the State Chamber of Commerce, closed his evidence after introducing testimony of representative industries throughout the state to show the alleged discrimination. The witnesses for the carriers were L. T. Averitt, of the Chicago, Milwaukee & St. Paul; George H. Krummer, of the Chicago & Eastern Illinois; S. C. Matthews, of the Pennsylvania; W. B. Ferguson of the Big Four, and Albert Conner, of the Southern.

Several coal companies operating mines along the Wabash near Terre Haute **are expected soon to pay the State of Indiana for coal they have extracted from beneath the bed of the river.** When the state enjoined the Western Indiana Mining Co., of Terre Haute, a year ago, preventing it from pursuing the usual practice of the region, a controversy started between state and mining companies which is just now reaching a termination. The state has tentatively agreed to small reimbursements and it is expected the amounts will be determined harmoniously at a meeting scheduled to take place in the State Capitol June 12. This means that hereafter the state's right to the coal under the river is recognized. Mining companies interested in the dispute besides the Western Indiana are the Grasselli, Ferguson-Spears, Jackson Hill, Richards & Sons, Miami and Lower Vein.

KENTUCKY

Fire on May 26 at Baskett, eight miles from Henderson, **destroyed the commissary store of the Pittsburg Coal Co.**, a west Kentucky coal producer, the loss being reported at $15,000.

A report from Washington, on May 29, states that Henry Ford interests are planning to build a combination bridge and dam at Ironton, O., crossing the Ohio River into Kentucky, with the idea of carrying an extension of the Detroit, Toledo & Ironton R.R. to Ford's coal lands in eastern Kentucky. It is planned to put in a big power dam, and electrify the D. T. & I., and probably furnish power to company mines as well.

MICHIGAN

Sealed proposals will be opened by the Superintendent of Lighthouses, 340 Post Office Building, Detroit, Mich., 2 p.m., June 12, 1923, **for furnishing coal as required by light vessels and light stations** for the fiscal year ending June 30, 1924, to be delivered at Detroit, Sheboygan, Sault Ste. Marie, Houghton, Hancock and Marquette, Mich., and Duluth, Minn. Information on application.

The Board of Education of Detroit will receive bids until noon, Monday, June 25, for furnishing about 600 tons of stove size anthracite for use during the fiscal year from July 1, 1923, to June 30, 1924.

MINNESOTA

The insurance adjustment on coal belonging to the Pittsburgh & Ashland Coal & Dock Co., which was burned on the docks of the Inland Coal & Dock Co. last winter, has been submitted to the Western Adjustment & Inspection Co. for arbitration and appraisal. The amount claimed is in the neighborhood of $200,000. H. J. Grannis, W. E. Greene and C. C. McElwin have been appointed appraisers. An effort will be made to settle out of court.

NEW JERSEY

Joseph S. Frelinghuysen, former U. S. Senator from New Jersey, announced just before sailing for Europe that upon his return he would devote much time and thought to forwarding the interests of a coal consumers' league, and to "make it a constructive machine by which consumers of coal will be assured a sufficient supply at reasonable prices."

NEW YORK

Burns Brothers reports total income of $1,140,028 available for the various issues of capital stock for the year ended March 31, 1923. After allowing for dividends on both classes of preferred stock, the balance available for the Class A and B common stock was equal to $9.18 a share on the former and $1.18 a share on the latter. In the previous fiscal year the company earned equal to $10.16 a share on the Class A stock and $2.16 a share on the Class B stock. The general balance sheet shows a profit and loss surplus of $9,451,239 on March 31, 1923, against $9,532,553 at the close of the previous fiscal year.

John F. Hylan, Mayor of New York City, on May 28 issued a proclamation advising the public to begin laying in its next winter's coal supply. "There will be no escape from another coal shortage with the approach of winter," he said, "though there may be no coal strike. There is talk of a strike on Aug. 1."

Governor Smith has signed the Downing bill which had passed both houses of the Legislature, appropriating $10,500 for plans and specifications for constructing tipples for coal at Ithaca and Watkins. This measure became chapter 581 of the laws of 1923.

The Socialist Party of America in its convention held in New York City recently, **adopted resolutions demanding the nationalization of coal mines.**

Lehigh Valley Coal Sales Co. has declared a dividend of **$2 per share**, payable **July 2** to those stockholders who are holders of full-share certificates of stock registered on the company's books at the close of business on June 14.

OHIO

Charles A. Albright, of the Albright Coal Co., Cleveland, Ohio, has been appointed as the representative of the retail coal trade to serve as a member of Federal Fuel Distributor Wadleigh's advisory committee in connection with the investigation of community storage, distribution, etc.

The Southern Ohio Coal Exchange reports that there were 198,862 tons of coal mined in the southern Ohio field during the week ending May 19 out of a full-time capacity of 751,992 tons. Of the shortage of 553,130 tons, car shortage caused a loss

of 171,068 tons; labor shortage, 7,290 tons; mine disability, 25,795 tons; no market, 348,677 tons. In the eastern Ohio field during the same week a total of about 10,000 cars were loaded as compared with 18,000 ordered, making a production of about 60 per cent.

PENNSYLVANIA

There is not sufficient money to the credit of the State Department of Mines to pay the salaries of the bituminous coal inspectors for the period from May 15 to May 31, the end of the present appropriation period. Joseph J. Walsh, Chief of the Department of Mines, recently asked the Attorney General's Department whether or not any part of the appropriation for the two years beginning June 1, 1923, can be applied to these salary payments. Sterling G. McNees, a special Deputy Attorney General, said it is impossible to answer this question finally at present, as the 1923 appropriation bill has not been passed by the Legislature. If this bill should be passed in the form in which it now is, or even in the form in which it has been passed by other Legislatures, Mr. McNees is of the opinion that no part of the money so appropriated for the next biennium could be used for salaries for inspectors, liability for which was incurred during the present biennium. "Whatever salaries are due until the end of the present biennium must be met from funds appropriated for their payment during this biennium," the opinion read. "If there are not sufficient funds in the appropriation for this biennium the result will be a deficiency, which it seems to me can only be met by the deficiency appropriation."

The Pennsylvania Coal & Coke Corporation and subsidiaries for the four months ended April 30, 1923, **shows net income of $469,612,** after interest, depreciation, etc., but before federal taxes, against $43,176 in the same period of the preceding year. Net income for April was $75,394 against a deficit of $89,797 in the same month of 1922. Gross income for the four months period was $509,394 as compared with $47,559 in the preceding year, while April gross stood at $87,732 against a deficit of $92,514 in April, 1922.

Two of the series of Bidelspacher mine bills were approved by **Governor Pinchot on May 28.** One of these, an amendment to the act of 1903, **increases the fees paid by applicants for certificates of qualifications as mine foremen** and assistant mine foremen in the anthracite mines. The bill as presented included provisions for first- and second-grade certificates for mine foremen in the bituminous mines, but these provisions were eliminated. The law, as amended now provides that before the examination of the applicants for certificates of qualification each applicant shall pay a fee of $2 and each successful applicant shall pay an additional fee of $3 before receiving a certificate. The other Bidelspacher act amends a law of 1911 and it **provides that mine operators shall pay to the Department of Mines the actual cost to the state of the assistant mine foreman's report book,** the mine foreman's daily and weekly record book and the fireboss' daily record book. These books have been furnished at state expense. The new law provides that money received for these books shall be deposited in the State Treasury and added to the funds appropriated for the payment of the salaries and other expenses of the inspectors of coal mines.

Glenbrook colliery, an independent operation, near Shamokin, **was idle ten days** because the company refused to employ two of four men whose services were not needed because of the installation of labor-saving machinery on refuse banks. The four men were notified that their services would not be needed, but the company union officials contended that at least two of the men should be retained. The company officials refused to accede to the demands of the union.

Alexander Howat, of Pittsburg, Kan., deposed president of District No. 14, United Mine Workers, and **Thomas Meyerscough,** of Pittsburgh, Pa., who admits being affiliated with the executive committee of the Workers' Party of America, **were barred recently from addressing an audience** of approximately 500 mine workers in Spencer's field, Dunmore, by Burgess, William G. Payton. The meeting, however, was allowed to go on with Rinaldo Cappelini, deposed Pittston organizer, filling the role of principal speaker. There was no disorder of any kind.

W. L. Connell, of Scranton, chairman of the Anthracite Board of Conciliation, and **George F. Lee,** of the George F. Lee Coal Co., of Wilkes-Barre, sailed for Europe Saturday, June 2.

Governor Pinchot has signed a bill requiring anthracite operators to furnish coal to schools, institutions, churches and municipal buildings at the prevailing market price.

Under the **direction of Chief of Mines Walsh, conferences are now being held in the anthracite region** between the mine inspectors and mine officials. A series of similar conferences will be held in the bituminous region as soon as the anthracite conferences are completed, **for the purpose of lessening casualties and increasing the comfort of the employees.**

Dr. Royal Meeker, Commissioner of Labor and Industry, has stated that **an undetermined number of inspectors will be dropped soon.** While the exact number is being withheld, Dr. Meeker volunteered the information that the cut will result in an annual payroll saving of approximately $80,000. Five inspectors have already been dropped, while others are due for severance from the payroll within the near future, Mr. Meeker said.

Fire of unknown origin May 29 **destroyed the No. 3 breaker of the C. Pardee Brothers & Co.** between Lattimer and Milnesville with a loss estimated at $50,000. The breaker had been ordered torn down with the completion of a new breaker nearby and work had already been started. Material was to have been used in other buildings. The fire threatened other buildings for a time and the Hazleton fire department was called to assist in fighting the blaze.

Governor Pinchot has approved the bill of Representative Post, Washington County, relieving life tenants of land from the payment of taxes on the underlying veins of coal which they have no right to operate. **The new law provides that such coal shall be assessed to and the taxes paid by the owner of the veins of coal.**

Alex Swinski, of Locust street, Scranton, **lost his semi-monthly pay amounting to $101.08** when he sat in with a few strangers recently in a card game in a drinking place, according to a story told the police.

Three thousand miners employed by the P. & R. Coal & Iron Co. near Shamokin, **quit work recently because retail coal sales clerks refused to join the United Mine Workers.** The clerks contended they were confidential employees and not entitled to membership. Colliery union officials have ruled to the contrary.

Application has been made to the U. S. Supreme Court by counsel representing the State of Pennsylvania and the City of Scranton **for a rehearing on the Kohler mine-cave law,** which was declared unconstitutional by that court in December last.

The net income of the Westinghouse Electric & Manufacturing Co. for the year ending March 31, 1923, was $12,263,485, as shown by the company's annual report. The dividend requirements were $6,033,428, so that over twice this amount was earned and more than six million dollars added to the surplus. Gross sales for the year were $125,000,000, which represents an increase of $25,000,000 over the sales of last year. The cash position of the company is a strong one, the current assets totaling over $106,000,000 and the current liabilities less than $17,000,000.

Judge Woolley, of the U. S. Circuit Court of Appeals, at Philadelphia in an opinion May 29 sustained the judgment of Judge C. B. Witmer, of the Middle District Court in the case of the Graff Furnace Co. against the Scranton Coal Co. in which the plaintiff was awarded a verdict of $12,000 for damages alleged to have been caused by the removal of lateral support from the property of the plaintiff.

Two more research fellows will be added next year to the staff of the Mining Department at Carnegie Institute of Technology, Pittsburgh, to continue the important coal-mine investigations now being conducted in co-operation with the U. S. Bureau of Mines. At a meeting of the Advisory Board of coal-mine operators held recently in Pittsburgh, various problems were suggested for research, and two companies agreed to finance the employment of additional research fellows. The Hillman Coal & Coke Co., which will finance the employment of one of the investigators, has recommended work on this problem: "The shooting of coal to produce a larger percentage of lump." The Mine Safety Appliance Co., which also will finance a fellowship, recommended that "the adaptability of gas masks in fighting mine fires" be investigated. The employment of two more investigators increases the staff to six, to be selected by the Co-operative Department of Mining Engineering at Carnegie Tech, and to work under the joint auspices of Carnegie Tech, the Bureau of Mines and the Advisory Board of operators. In June of this year the second year of research work on coal-mining problems will be completed. The investigations at Pittsburgh already have attracted much attention. Among the problems suggested by the operators for attack next year are: continuation of the study of the correlation of coal beds of western Pennsylvania through their microscopic constituents; extension of the study of acid mine waters to the actual tests of various experimental machinery parts in the mines, and mine-car gear and lubrication.

The following coal companies were incorporated recently at Harrisburg: **Maxton Coal Co.,** Philadelphia; mining, manufacturing, buying and selling coal and coal products; capital, $50,000; incorporators, Robert W. Wigton, Philadelphia, treasurer; F. H. Wigton, Philadelphia, and Charles B. Maxwell, Morrisdale. **Tiega Track Coal Co.,** Philadelphia; acquiring coal and coal lands; capital, $25,000; incorporators, Harry F. Foote, Jr., 3311 North 20th street, Philadelphia, treasurer; Edward S. Bureau, Philadelphia, and Edmond W. Bureau, Philadelphia. **Listie-Quemahoning Coal Co.,** Listie, Somerset County; mining coal and manufacturing coke; capital, $200,000; treasurer, E. T. Norton, Connellsville; incorporators, J. L. Kendall, Pittsburgh; W. F. Stauffer and F. L. Brown, Scottdale.

Announcement has been made that **the People's Fuel & Supply Co. and the Foster Coal & Lumber Co.,** both of Red Lion, **will be merged.** The combined coal-land holdings in Huntington, Fulton and Bedford Counties will be more than 1,500 acres. The new company will be capitalized at $150,000. Thirty-nine new steel coal cars were purchased recently.

The C. A. Hughes Coal Co., of Altoona, **has purchased the Mountain Quality Coal Co. mine at Twin Rocks,** and already has been started to make improvements. The new owners will erect a modern tipple and arrangements are now being made to have a siding placed to the mine from the Cambria & Indiana Ry. Homes for the employees will be erected within a short time in the vicinity of Seldersville.

After being associated with the Cambria Steel Co. in Johnstown since 1901 as an expert chemist, **H. A. Hosmer** has announced his retirement from the position **to enter the wholesale coal business.** He will be associated with John Tredennick of Boston, Mass., distributor of large coal tonnages from the coal fields of central Pennsylvania. The Johnstown company will be known as the Standish Coal Co. Mr. Hosmer is a native of Massachusetts.

B. H. Cannon, chairman of the executive committee of the Pittsburgh Coal Operators' Association, announced May 31 that **Richard W. Gardiner has resigned as commissioner of the association.** The committee accepted the resignation and it will go into effect immediately. Mr. Gardiner had been commissioner of the association since 1917, when he succeeded Mr. Morrow.

A coal deal involving $100,000 whereby the **Cosgrove & Meehan Coal Co., of Johnstown, becomes part owner of the Gahagen coal lands** near Cairnbrooke, Somerset County, became effective last week. By this deal the Johnstown company increases its possessions by several hundred acres of coal land, 50 tenement houses and a general store. The former owners were William and Clarence Gahagen, who control the Huskin Run Coal Co. The Cosgrove company owns 300 acres adjoining and expects to increase the output to 5,000 tons daily.

UTAH

Articles of incorporation of the **Utah Central Coal Co.** have been filed with County Clerk L. A. Van Dyke. The capital is $500,000, with shares of the par value of $100 each. The officers and directors are M. S. Browning, president; E. S. Rolapp, vice president; John Browning, secretary and treasurer. The foregoing, with Ribert Y. Gibson and Neil M. Madson, comprise the board of directors. The property of the company is located in Carbon County.

VIRGINIA

Trial of the fifteen suits of the Norfolk & Western Ry. against coal companies with agencies, at Norfolk, for amounts aggregating nearly $500,000 for demurrage charges alleged to be due, **opened last week.** The case of the Pan Handle Coal Co. was

heard in the City Circuit Court, and on its outcome will be based the decision on the fourteen other cases. Judge A. R. Hanckel has taken the argument in this case under advisement. It is the first time in the history of the business at Norfolk that this procedure has been followed, and coal men are deeply interested in the outcome.

WEST VIRGINIA

The Wheeling Coal Co. is about to open a mine in a 400-acre tract in Ohio County near Wheeling, on the Pennsylvania R.R. The tipple will be equipped with a 40-in. conveyor and automatic drop-bottom cars will be used. The organizers and operators of the company are Frank Costanzo, president and general manager; Louis Costanzo, vice-president and assistant manager; T. G. Costanzo, treasurer, and E. J. Arnald, secretary.

Differences between the government and the Orr Mining Co. as to the amount of federal taxes it should pay figured in a suit tried in the U. S. Court for the northern District of West Virginia at Parkersburg late in May, **the government contending that the Orr Coal Mining Co. owed $150,000 on income tax and excess profits** for 1917 and 1918. The coal company contends that it was purchased by the Hudson Coal Co.

WASHINGTON D. C.

Within the next few days **the U. S. Civil Service will announce the opening of a new examination for valuation engineers** for entrance into the civil service and to be assigned to the coal valuation section of the Income Tax Unit in Washington, D. C. Papers may be obtained upon request from the Civil Service Commission, Washington, D. C.

The U. S. Geological Survey announces that during April reports were rendered upon 43 applications for coal-prospecting permits and 24 applications for coal leases in Western states.

Federal Fuel Distributor Wadleigh has addressed a letter to H. R. Heyden, Secretary, National Association of Purchasing Agents, strongly **urging the association and its individual members to store coal to capacity during the next three months**, in order, as he expresses it, that "the country may have on Sept. 1 stocks of coal sufficiently large to assist the transportation interests in handling the greatest volume of traffic in their history," this fall. Such action, Mr. Wadleigh points out, will be not only a help to the railroads, by enabling them to move coal before the peak of their general traffic load arrives, but it will also be a protection and insurance to coal consumers.

WISCONSIN

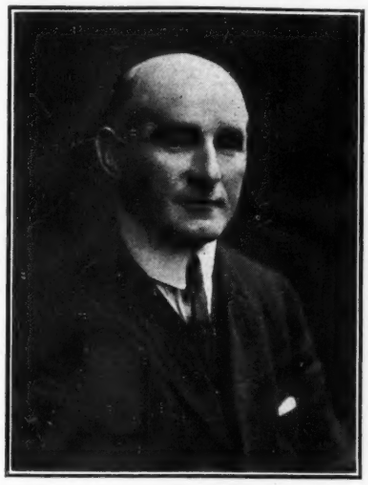
The City Purchasing Board of Milwaukee has awarded contracts for the delivery of coal to the various city departments as follows: Wisconsin Great Lakes Coal & Dock Co., lump $6.75, screenings $5.60; Youghiogheny & Ohio Coal Co., lump $6.90, screenings $5.22; United Coal & Dock Co., screenings $5.73; Callaway Fuel Co., screenings $5.60.

A joint resolution memoralizing Congress to enact legislation protecting coal consumers by **requiring mine operators to furnish proof of the quality of coal sold** has been introduced in the Legislature of Wisconsin. The resolution sets forth that "during the last year coal operators have sold to the people vast quantities of refuse material claiming the same to be coal."

The Milwaukee-Western Fuel Co. suffered a heavy loss on Sunday, May 20, 1923, when the steel **steamer Edward U. Demmer,** bound from Toledo for Milwaukee with a cargo of 7,200 tons of soft coal **went to the bottom of Lake Huron,** following a collision with the steamer Saturn. Fortunately no lives were lost. The vessel and cargo represent an insurance loss of about $400,000.

CANADA

James McGregor, who has been chief inspector of mines for British Columbia since May 10, 1920, has resigned the position because of ill health. He had been in the service of the department for about 25 years. **The duties of the office were taken over June 1 by George Wilkinson,** who was chief inspector from 1917 to 1920 and resigned to become general superintendent of the Pacific Coast Coal Mines, Ltd. Mr. Wilkinson, has had many years experience as a mine operator and engineer in that province. Prior to becoming chief inspector in 1917 he was manager of the Western Fuel Co.'s reserve mine at Nanaimo. Born in Cumberland, England, May 27, 1875, he was at work in the mines five years before coming to Vancouver Island in 1896. Since then he has been engaged, practically without cessation, in and around the coal and metalliferous mines. His technical qualifications are the highest, as



GEORGE WILKINSON

he holds a first class manager's certificate both in British Columbia and Alberta and is a member of the British Columbia Institute of Engineers. He conducted investigations into the two recent explosions in the No. 4 mine of the Canadian Collieries Co.

It was announced in the House of Commons at Ottawa a few days ago that the **Hoppe coal leases in Alberta had been cancelled.**

The Dominion Fuel Board, appointed last November, with Charles Carnsell, Deputy Minister of Mines, as chairman, to investigate the fuel problem, have issued an interim report making the following recommendations: Wider range of utilization of the coals of British Columbia, Alberta and the Maritime Province; investigation into the feasibility of establishing by-product recovery coking plants in the larger centers of population; utilization of peat to supply a portion of the fuel needs of central Canada, with further encouragement of the industry by the governments concerned, if necessary; utilization of wood resources under proper management to a greater degree than at present. Electric house heating on a large scale is considered impracticable, but it is pointed out that the use of electrictiy for industrial and transportation purposes will set free a large amount of coal for heating. The report concludes with a warning that with the anthracite fields nearing exhaustion the public must look to other sources for fuel.

Obituary

John H. Scott, manager of the Wilkeson Coal & Coke Co. of Tacoma, Wash., died of heart failure in New York City early in May. Mr. Scott was a veteran of the Civil War and had been a coal operator for many years before his death.

William J. McClain, secretary-treasurer of Waldo, Egbert & McClain, Buffalo, N. Y., extensive jobbers in steel, coal and coke, died on May 22, aged 39. He was for several years connected with the Carnegie Steel Co. at Youngstown and later with the Republic Iron & Steel Co., which latter he left to become a member of the present company. He was popular socially and a member of many local organizations. He leaves a wife and child.

Harry P. Mahaffey, aged 45 years, assistant superintendent of the Wilmore Coal Co. and one of the most prominent citizens of Windber, Somerset County, Pa., died May 23 in the Windber hospital. His death was due to influenza and bronchial pneumonia. He was born at McGees Mills, Clearfield County, and received his education at Pennsylvania State College. He was located in Windber for eleven years.

John W. Spickelmier, 67 years old, a pioneer coal dealer and cement block manufacturer of Indianapolis, died recently at his home in that city. Mr. Spickelmier was born Jan. 10, 1856, in Hendricks County, Indiana, and went to Lebanon to live when a young man. He moved to Indianapolis to engage in business many years ago and was founder of the Boulevard Cement Block Co. and the Spickelmier Fuel & Supply Co. The widow, Mrs. Martha Spickelmier, and three daughters survive.

After a brief illness, **Colonel Stuart W. Walker,** of New York and Martinsburg, W. Va., general counsel for the Consolidation Coal Co., expired at his home at Martinsburg on Wednesday, May 23. He had suffered a stroke of paralysis early Monday morning, May 21. Colonel Walker entered the service of the Consolidation Coal Co. two years ago, upon retiring as U. S. Attorney for the Northern District of West Virginia, in which office he had served for two terms under President Wilson. He was a graduate of the law school of Washington and Lee and had been a practicing attorney in Martinsburg until his appointment as counsel for the Consolidation. He had always been active in Democratic politics, at one time opposing the late Judge A. G. Dayton as a candidate for Congress and twice being elected delegate at large to national conventions of his party. He served as assistant district attorney from 1895 until 1897. Colonel Walker is survived by a widow, formerly Miss Annette Thayer of Charleston, and by one brother, Hunter Walker, of Berkeley County. Funeral services were held at his home, "The Pillars," near Martinsburg, on Saturday, May 26, interment being at Martinsburg. The Circuit Court of Berkeley County, in session at Martinsburg, adjourned on May 24 out of respect to his memory.

Association Activities

Pittsburgh Wholesale Coal Associations

M. H. Jacobs, assistant general freight agent of the Western Maryland R.R., addressed the members of the Pittsburgh Wholesale Coal Association at their weekly meeting May 28 on the subject: "The Western Maryland R.R. and Its Relation to the Coal Industry," dealing with the history of the Western Maryland and statistics relative to equipment and tonnage movement as well as describing the coal-producing territory touched by this railroad and reached directly or in conjunction with other railroads. A speakers' committee composed of W. C. MacQuown, Keister-MacQuown Fuel Co.; J. A. Collette, Farrell Fuel Co., and I. W. Brison, Poland Coal Co., was recently appointed by President Frank Howard of the Bellebridge Coal Co. for the purpose of making the meeting more interesting to the members. All attendance records have been broken, and at the present rate it looks as if larger quarters will be necessary to take care of the large number of members and friends attending the meetings.

Traffic News

The Norfolk & Western, it is reported, will undertake further electrification of its lines during June between Farm and Iaeger. When the work is completed it will be possible to use electric motors for a distance of about 60 miles, covering the heaviest grades of the entire system and on that part of the road where much of the coal traffic handled by the road originates. The N. & W. already has about 40 miles of track under electrification, excluding the Bluefield yards and the trackage on Tug River fork.

Announcement has been made of an order recently made by the Mobile & Ohio Railroad Co., for new equipment costing approximately $2,400,000, all to be delivered in time for the heavy traffic rush next fall. Included in the order were 200 50-ton all steel coal cars and they will be built by the American Car & Foundry Co. at St Louis and Memphis. Ten Mikado type freight locomotives were in the order and will be built at Lima, Ohio.

W. H. Truesdale, president of the **D., L. & W. R.R., cites in the annual report of the company a decrease in surplus** for 1922 of $5,304,830.67 when compared with 1921. The loss from revenues amounted to $11,355,471.17 and from expenses $4,200,410.78. The company received $4,699,063.93 from the U. S. Railroad Administration. Due to the strike, earnings of the coal department

show a loss of $6,582,558.23 when compared with 1921, the net income during 1922 amounting to $43,847.21. Dividends declared totaled $10,132,932, or $3,377,644 less than during the previous year. Mr. Truesdale says that during the strike of the hard-coal miners scarcely a ton of coal was produced, with the result that with the reduction in freight rates effective July 1, 1922, the revenues of the company from the transportation of anthracite decreased $12,312,107. The company transported over its lines 21,798,417 tons of freight, or 2,875,385 tons less than in 1921, although the loss in the transportation of anthracite alone was 4,391,721 tons. The cost of fuel for locomotives and floating equipment increased $1,163,391 over the previous year.

A large number of **Kewanee (Ill.) industries have applied for a reduction in freight rates on coal from Peoria and Fulton counties, Ill.**, to that city. It is claimed by Kewanee industries that there is an inequality of rates between Galesburg, Ill., and Kewanee.

As practically all embargoes, prohibiting the movement of coal and coke shipments on or via the **New York Central R.R.** have now been cancelled, the company announces that its **"Summary of Informal Embargo Notices" will be discontinued.**

The Muscatine (Iowa) Shippers Association is investigating freight rates on coal from Illinois mines to that city. It is estimated that 2,000 cars of coal are annually used in Muscatine from Illinois fields. Present rates to Muscatine are higher than to Davenport, Iowa, with the distance favorable to Muscatine.

Attorney-Examiner P. F. Gault, of the I.C.C. has reported, in the **case of the Indiana State Chamber of Commerce vs. The Baltimore & Ohio Railroad Co.** The conclusions are practically as asked for by the complainants—providing decreases of from 8 to 22c.—with the exception of the rates from West Virginia and Kentucky to "gas belt" points where a reduction of 17c. was recommended as against 32c. asked. Exceptions will be filed to this item.

The Coal and Coke Committee, Trunk Line Territory, announces hearings at 143 Liberty Street, New York, commencing on the morning of June 6, 1923, relative to the following subjects: Adjustment of rates on bituminous coal from all originating bituminous coal lines publishing rates to D., L. & W. R.R., Norwich, N. Y., and intermediate territory, Willards to Haynes, N. Y., inclusive, N. Y., O. & W. R.R., Norwich and Oxford, N. Y. The present rate on the Clearfield basis is $2.96 gross ton and the proposed rate $3.09. The usual arbitraries over Clearfield basis from other groups of origin to be maintained. Another subject is the carriers' proposal of cancellation of rates on bituminous and cannel coal as shown in tariff I.C.C. No. 3464 from mines on the Pittsburgh, Shawmut & Northern R.R. to Jamison City, Masten and Powell, Pa. The reason for this change is to remove obsolete rates from the tariff. Another subject for hearing is the cancellation of joint rates on coke from ovens on originating lines to destinations in Nova Scotia, New Brunswick, and northern Maine, except St. John, N. B., West St. John, N. B., Halifax and Sidney, N. S. The reason for this proposal is that the rates are obsolete and there is no movement to points other than those named above. Another subject is adjustment of rates on coke from ovens on the Pennsylvania System and lateral connections to various points on the West Shore R.R. For instance, the present rates from the Gallitzin group to various points such as Ridgeland and Churchville on the West Shore, and Phillipsburg on the Pennsylvania System, are as follows: $3.65 net ton to be increased to $3.76; $3.63 net ton to be increased to $3.76; $3.25 net ton to points on the Pennsylvania to be increased to $3.38, with the usual arbitraries over Gallitzin basis from other groups of origin. The reason for this proposal is to remove the fourth section departures. At the same time and place there will be hearings with reference to the movement on anthracite coal from mines on the N. Y., O. & W. R.R. to New York Central R.R. stations from Schenectady to Rensselaer, N. Y., and the rates on anthracite from the various originating lines to a number of points on the New York Central R.R. Anyone interested in any of these subjects should communicate with Joseph Weed, chairman of the Coal & Coke Committee, at 143 Liberty Street, New York.

The Kentucky Railroad Commission, has handed down a decision for the Elkhorn-Hazard Coal Co. against the Louisville & Nashville R.R. concerning freight rates on bituminous coal from certain mines in the Hazard coal field to destinations in the state. The complaining companies operate mines in the vicinity of Whitesburg and, because their rates were 10c. a ton higher than rates of other operators in the Hazard field, they have practically been excluded from doing business in Kentucky. In giving the complainants the same rates as other Hazard coal mines the commission puts them in position to reach Louisville and other Kentucky cities on a rate equally with Hazard group operators and also those in the Jellico field.

The Baltimore & Ohio R.R. has filed an application with the Interstate Commerce Commission asking authority to abandon a part of the line of that road in the State of Ohio 17 miles long, extending from a point near South Wooster, Wayne County, to Millersburg, Holmes County. The company says the earnings do not justify its continuance, and therefore the move is in the interest of economy.

E. J. Cleave, formerly connected with the Pennsylvania R.R., **has been appointed district manager of the Car Service Division of the American Railway Association n New York** with headquarters at 30 Vesey Street. He assumed his new duties on June 1. The appointment is in line with the policy recently announced by the Car Service Division of establishing district headquarters in certain cities for the purpose of bringing about closer co-operation between shippers and the carriers and to enable the railroads to anticipate as far as possible the transportation needs of the industrial and agricultural districts in various parts of the country. District headquarters have already ben established in Minneapolis, Birmingham, Dallas, St. Louis, Chicago, Cincinnati and Toledo. The territory making up the New York district includes all New York City terminals and practically all of the state, as well as the entire states of New Jersey and Delaware, the eastern shore of Maryland and Virginia and the eastern half of Pennsylvania.

On the ground that it has no jurisdiction, the **Interstate Commerce Commission has dismissed the complaint of the International Harvester Co.**, in which the rates on coal between Farmington and St. David, Ill., to Canton, Ill., were attacked as being unreasonable. Since the rates are not held to be unreasonable in their relation to interstate rates, the commission holds that it has had no jurisdiction over these rates since the termination of federal control.

Reparation has been awarded Tuffli Bros. Pig Iron & Coke Co. because of the application of an unreasonable rate on coke between Benham, Ky., and Abilene, Kan.

Continuance of operation on the part of the Federal Valley Railroad Co. in the Athens region of Ohio is essential to the public interest, it is contended by the United Mine Workers of America, the Black Diamond Co., the Jennings Coal Co., the Federal Creek Coal Co., the Schuler Coal Co. and the Athens Chamber of Commerce in briefs filed with the Interstate Commerce Commission. It is contended that this line serves an area from which large amounts of coal are recoverable. The potential tonnage of that portion of the Pittsburgh vein is said to be more than 200,000. In addition, it is claimed that there are large tonnages available in the Hocking and No. 7 beds. If sufficient equipment is furnished and definite assurance of the continuance of service is given, greatly increased production may be expected from the territory tributary to this line. The interests mentioned are taking no part in the controversy as to what may constitute proper divisions for the Federal Valley line. Their only claim is that the divisions be such as to continue, improve and promote the service now being rendered.

Railroads of the United States, according to the Car Service Division of the American Railway Association, on May 15 **had 50,587 serviceable locomotives**, an increase of 328 over the total number on May 1 this year, which had previously marked the peak. Locomotives in need of repair on May 15 totaled 13,495, or 21 per cent of the number on line. Compared with the number on May 1, this was a decrease of 636. During the semi-monthly period from May 1 to May 15, a total of 16,904 locomotives were repaired and turned out of the shops. This was an increase of 485 over the number repaired during the last half of April. Between May 1 and May 15 this year **the roads installed 5,633 new cars and 308 new locomotives.** This brought the total number of new freight cars installed since Jan. 1 to 55,784, while a total of 1,536 new locomotives have been placed in service during the same period. New freight cars on order on May 15 totaled 113.619. Of that number 45.742 were for coal cars. During the first 15 days in May the carriers placed orders calling for the delivery of 147 new locomotives which brought the total number on order on May 15 to 2,103.

Coming Meetings

Iron and Steel Exposition at Buffalo, N. Y., Sept. 24-28. Association of Iron and Steel Electrical Engineers, Empire Building, Pittsburgh, Pa.

The American Wholesale Coal Association will hold its annual convention June 12 and 13 at the Gibson Hotel, Cincinnati, Ohio. Secretary, G. H. Merryweather, Union Fuel Bldg., Chicago, Ill.

Illinois and Wisconsin Retail Coal Dealers' Association will hold its annual meeting June 12-14 at Delavan, Wisconsin. Secretary, I. L. Runyan, Great Northern Building, Chicago, Ill.

Southwestern Interstate Coal Operators' Association will hold its annual meeting June 12 at Kansas City, Mo. General Commissioner, W. L. A. Johnson, Kansas City, Mo.

New England Coal Dealers' Association will hold its annual meeting at Providence, R. I., June 13-15. Secretary, C. R. Elder, Boston, Mass.

National Retail Coal Merchants' Association will hold its sixth annual convention June 25, 26 and 27 at Scranton, Pa., with headquarters at the Hotel Casey.

National Safety Council will hold its twelfth annual safety convention at the Buffalo Statler Hotel, Buffalo, N. Y., Oct. 1-5. Managing director and secretary, W. H. Cameron, 168 No. Michigan Ave., Chicago, Ill.

International First-Aid and Mine Rescue meet will be held Aug. 27-29, at Salt Lake City, Utah.

American Institute of Electrical Engineers will be held Aug. 27-29, at Salt Lake City, Utah.

American Institute of Electrical Engineers will hold its annual convention June 25-29, at Swampscott, Mass. Secretary F. L. Hutchinson, 29 West 39th St., New York City.

American Society for Testing Materials will hold its annual meeting at the Chalfonte-Haddon Hall Hotel, Atlantic City, N. J., beginning June 25 and continuing throughout the week. Secretary, E. Marburg, Philadelphia, Pa.

The Colorado & New Mexico Coal Operators' Association will hold its annual meeting June 20 at Denver, Col. Secretary, F. O. Sandstrom, Denver, Col.

The Electric Power Club's annual meeting will be held at the Homestead, Hot Springs, Va., June 11-14. Executive secretary, S. N. Clarkson, Cleveland, Ohio.

National Coal Association will hold its sixth annual convention June 19-22, at Atlantic City, N. J. Assistant secretary, C. C. Crowe, Washington, D. C.

Retail Coal Dealers' Association of Texas will hold its eighteenth annual convention at Galveston, June 11 and 12. Secretary, C. R. Goldman, Dallas.

The American Institute of Mining and Metallurgical Engineers has accepted the invitation extended by the Ministers of Mines of Ontario and Quebec and by the Canadian Institute of Mining and Metallurgy to hold its autumn meeting in Canada. The meeting lill start Aug. 20 at Toronto and end Aug. 30 at Montreal. Secretary, F. F. Sharpless, 29 West 39th Street, New York City.

West Virginia Coal Mining Institute has set June 12 and 13 for its annual meeting, to be held at Hotel Waldo, Clarksburg, W. Va. Secretary, R. E. Sherwood, Charleston, W. Va.

Coal Mining Institute of America will hold its annual meeting Dec. 19, 20 and 21 at Pittsburgh, Pa. Secretary, H. D. Mason, Jr., Chamber of Commerce Building, Pittsburgh, Pa.

The American Mining Congress will hold its twenty-sixth annual convention in conjunction with the **National Exposition of Mines and Mining Equipment**, Sept. 24-29, at the Milwaukee Auditorium, Milwaukee, Wis. Secretary, J. F. Callbreath, Washington, D. C.

Ninth National Exposition of Chemical Industries at the Grand Central Palace, New York City, week of Sept. 17. Manager, Charles F. Roth, Grand Central Palace, New York City.

The Engineering Section of the **National Safety Council** will hold its second meeting of the year on June 12 in the Board of Commerce Building, Detroit, Mich., in co-operation with the Detroit Safety Council.